RAILROAD GAZETTE

SATURDAY, FEBRUARY 17, 1872.

NEW YORK "ARCADE" RAILROAD.

The engraving herewith represents a plan for a railroad under Broadway, and is one of the proposed solutions of the rapid transit question. Its construction requires but little explanation, as the engraving is sufficiently clear. It will be observed that the present roadway and sidewalks of the street will be left the same as at present, with the exception that openings will be made next the buildings for light and ventilation. The street is to be excavated the full width from the buildings on one side to those on the other, and the roadway above them carried on columns and arches overhead. There are to be four tracks, two for fast and two for way travel. There will also be two additional subterranean sidewalks on the same level as the railroad. The plan has been presented to the New York Legislature each winter for the past three or four years, and came very near securing a charter at two different sessions.

It is proposed to build it by constructing a temporary bridge for the accommodation of the travel on Broadway above, while the requisite excavation and work is done below.

Its advocates claim for it the following advantages:

1. It provides a pleasant, rapid transit for through passengers between the lower and upper ends of the island, and a slower but still speedy movement for the local pas-engers.
2. It provides a cheap and convenient channel for the conveyance of freight between the termini of the steam railways and a large portion of the business houses in the city.
3. It classifies the travel and trade, and removes from the present street so many of its vehicles as to render it more useful and pleasant for carriages.
4. It furnishes an arcade avenue and promenade, convenient for pedestrians at all times, and with special advantages in warm, cold or stormy weather.
5. The sub-way will be well ventilated and lighted, so that its use will be pleasant and healthy.
6. It can be constructed without interruption either to the travel on the street or the convenient use of the buildings adjacent, and without occupying the street for the hauling of the materials required from or to the work; and it can be built without endangering any of the structures along the street, and with arrangements for a better location of the water and gas pipes and sewers, and without any interruption of the present connections.
7. The route selected, namely, that along Broadway, is determined by the topography of the island.
8. It in no case occupies or injures any private property, but in nearly all cases greatly enhances the value of the property along its route.
9. There are no difficulties attending the construction of the work which cannot be overcome with engineering skill, and at a comparatively moderate cost.

Finally, it meets a necessity in the most complete and unobjectionable manner.

Proposed "Arcade" Railroad for Broadway, New York.

Brake Trials.

The *American Railway Times* says that the Providence & Worcester Railroad Company is now trying three kinds of power brakes at once—the Westinghouse air brake, the Olmstead electric brake and the Steinhard steam brake. The *Times* says:

"In the economy of railway operation the engineer of the locomotive exercises a most important influence. If he is an intelligent person, he will understand that in starting, if he throws the throttle valve open with a jerk, he takes a good many dollars, possibly hundreds of dollars, out of the wearing value of the rolling stock; and the hand-brake men, often the most ignorant and unreflective class, can do the same injury by applying the brake so hard as to skid or slide the wheels, thus grinding out of a true circle, and making the wheels instruments of discomfort and possible danger, to say nothing of the needless expense. In making the engineer responsible for the *movement* of the train by enlarging his duties, as must be done by the use of power brakes, he will be likely to take a more decided interest in the ease of the movement of the train, whether in starting or stopping; he will take some pride in becoming an expert, if not an artist in these matters, and if he is the man for the place, can save the company a good many hundreds and even thousands of dollars annually in the wear of rolling stock and rails."

A Novel Accident.

The Boston *Advertiser* gives the following account of a curious accident which recently occurred to a freight train of the Boston & Albany Railroad, west of Springfield:

"The rear car of train going west broke from its fastenings when near Middlefield, and dashed down the grade at the rate of a mile a minute till it met the locomotive Vermont that was drawing a train westward on the same track. Engineer Harkness, of the Vermont, and the fireman discovered their danger, and jumped from the engine just before the runaway car struck it. The car was loaded with casks of rum in transit from Medford to Albany, and the sparks from the engine ignited the rum, and that and the car were burned up. Fortunately, no one was hurt.

Fast Southern Time.

The New Orleans *Picayune* says that the fastest time ever made on a Southern railroad was made by the train which conveyed Thomas A. Scott and others of the Executive Committee of the Southern Railroad Security Company from New Orleans to Memphis on the 31st ult. This train ran the distance, 140½ miles, in 3 hours and 37 minutes, just about 39 miles an hour. From Summit to Mobile, 20 miles, the time was only 20 minutes.

Contributions.

AMERICAN TRAIN DISPATCHING.

To the Editor of the Railroad Gazette:

I will venture a few words on the subject of "Train Dispatching," called out by the paper by "A Hindoo" in your number of February 3. The system described in that paper seems to be the usual English system, which is doubtless safe. No man will deny that. But the question comes up: Can all be as safe by any other system which may be more economical? In the early days of our American railroads—and the same is true of a large number to-day—the amount of business was small, requiring but few trains each day, and these were run entirely relying on time and rules for the government of trains when off time. As trains increased, many of the Eastern roads built a second track, and thus got over their troubles. Our Western roads could not do this, and were forced to call the telegraph in to aid them. That the system was crude at first is not denied; but years of experience have developed events and dangers which have been provided for. Rules have been laid down which, if followed, make the movements absolutely safe. Below are some of the chief:

No trains must be run on the line without the knowledge and instructions of the dispatcher.

All orders for the movement of trains by telegraph will be put into writing, addressed to the conductor and engineer. The conductor will write his understanding of the order, which will be reported back to the dispatcher, who, if the order is correctly understood, gives the "O. K." to conductor and engineer. No train must run on such an order until the "O. K." is received. Conductors, when directed by an order of this kind to run, must not leave a station without having the same in their possession.

Conductors of all trains are required to leave at all stations a statement in writing of the time of arrival and departure. This time, which is examined by the operator to see if it is correct, is reported to the dispatcher, with number of train, &c.

The dispatcher keeps a record of all trains at all stations on a sheet before him, and is thus enabled to see at a glance just where every train is, and figure for meeting and passing points. If, as is the case daily on many of our roads, a large number of trains are running each way closely together, some must be held back and some let go forward, in order to get past without delay. Many times these if left alone would meet at a point where, by reason of a grade or want of side-track room, there

would be much trouble and time lost. The dispatcher holds two or three trains bound one way at A, and as many more at B, because they could not let others by them if they pressed on to C. Trains bound the other way are let by and on they all go. Trains not on schedule start with an order to run as wild trains to station Z. This gives them a right to the road, except over regular trains whose time is on card. Should it be necessary to run them against a regular train to any point, an order is given to the operator at this point to hold the train they are to run against until they arrive. He puts out his signal and notifies the train that they are held—and *then reports* "*train is held*," and gets his "O. K." *After* this has been done, the first-mentioned train receives the order to run to the point at which the other train has been held, regardless of that train. Or trains sometimes have orders to meet certain other trains at certain points. When a number of trains are running the same way, pretty near together, each receives a notice in writing at such station of the time the preceding train left. Signals are used—the more perfect being those that are positive—and show that there are or are not orders for any train. Thus a given signal (a red light by night—some roads use other colors) is put out to hold a train or to signify that there are orders for them. If no orders, a white signal is shown. The conductor goes at once to the office, if a signal is out when he arrives, and sees what the orders are.

As was said in the paper alluded to, "any plan to be safe must be faithfully carried out in every detail or it is worthless." So with this. If carried out faithfully it is safe.

About eighteen months ago the writer had the pleasure of a call from Major Taylor, one of the Royal Engineers connected with the Indian railways, who was at that time looking over our "Americanisms" with a view of seeing if there was any good in us. This dispatching system was fully examined by him in all its details and workings. He seemed much pleased with it, expressing his determination to introduce it into India, as he felt sure he could thereby increase the efficiency of a single-track road, reduce expenses and remain as safe as under the old system. I have since seen it stated, in *Engineering*, if I remember rightly, that he had carried out his desire and had organized one of the Indian railways on the American system. We shall be glad to learn with what success the new system works by the side of the old. We feel sure that if used as is now being done on some of our best roads, it will prove itself as safe as it has on those and will surprise those unaccustomed to it in the number of trains that can be handled. There must not be neglect or guessing, but a strict following of rules. That, however, is the essence of any system. X.

PAPERS ON BRIDGE CONSTRUCTION.

NO. III.—ON DESIGN AND CHARACTER OF WORK.

Inasmuch as these desultory papers have primarily in view railroad truss bridges, it is proposed only to examine those forms that have more or less satisfied the parties directly interested. The different styles of truss bridges may be easily classified, so far as principles of action go, but the employment of material and variation of detail is infinite. A good and substantial bridge can be built in any of the recognized types, if it is constructively well carried out, assuming that the parts are correctly proportioned; while, on the other hand, faulty construction in details and improperly devised connections may carry condemnation in the very same general design. This matter of detail lies perhaps at the bottom of all good bridge construction, and deserves the severest study, not only in view of strength in perfectly connecting the several parts, but also bearing in mind that economy of construction is in exact proportion to its simplicity and similarity.

The manner of connecting the various parts of a truss may be classified under the general headings of "rivet," "pin" and "screw-end" connections. Regarding the first, it is, with local exceptions, rarely practiced in this country, partly because of the expense involved in its proper execution, and partly because more material is required to make it constructively possible than with either of the other methods. In England and on the Continent that mode is almost exclusively practiced, which is the more astonishing when one reflects upon the magnificent successes attending the "pin" and "screw-end" connections in America. Apart from any excess of material required, the principal objection to riveted connections consists in the difficulty of matching the holes of contiguous plates, frequently requiring drifting or reaming to allow of the insertion of the rivet. There result from this initial strains in the structure impossible to compute, and therefore unadvisable. Not that riveting cannot be done accurately, but to do so a care is involved in laying out the templates not apt to be secured, and the holes should be drilled and not punched. In England multiple drills are more or less used, and they go far toward overcoming the difficulty of getting holes to match. Another point worthy of consideration should not be overlooked in connection with the subject of riveting, and that is the shrinkage of hot rivets, thus leaving a space between them and the iron of the plates, and throwing a heavy duty on the rivet heads. If the heads of a riveted guide are cut off with a cold chisel, the rivets will nearly always drop of their own weight, unless they become distorted when headed by being forced into the irregularities of ill-matched plates. This is inseparable from work riveted up hot, and cold rivets draw-filed are necessary to overcome it. Plates truly drilled in position, and draw-filed rivets fitting accurately and hammered down cold produce the only accurate riveted work, but at the same time an expenditure of time and labor that few if any are willing to incur. The proportion of depth to span is largely dependent on the mode of construction. When a truss is made deep, the thrust braces of the web system must be made proportionally stiff, which becomes a matter of peculiar difficulty in the English or riveted system, more particularly in making a satisfactory connection with the chords in conjunction with the tension braces. While this fact has largely to do with the comparative shallowness of riveted trusses—rarely over one-tenth the span—the *pin connection*, on the other hand, is restrained by no such limitation. A section of strut may be used in that case of the best form possible for resistance to compressive and bending strains, and its connection with the chords and tension braces is as simple for a low truss as for a deep one. So that the depth of truss, involving an important economy of material, is almost entirely regulated by convenience. The pin connection not only permits of the best quality of material, but also allows of working the areas of section in most cases to their exact theoretical requirements, which is in strong contrast to riveted work, where a large surplusage of material is necessary to replace that destroyed by riveting, in addition to the excess necessary to put the design in a practicable shape. It has been objected by some that the pin connection, while theoretically a very perfect method, is open to the objection that it is mechanically impossible to so adjust the lengths of the several parts as to make a perfect fit, and thus irregularly strain the bars. The term *perfection* must be used in mechanical work entirely in a relative sense, since there is nothing absolutely perfect in any mode that can be adopted. What we must strive after is to use the means and appliances that are more nearly perfect than any other. This perfection can be more nearly approached in the pin connection than any other, owing to the fact that all the operations of manufacture are purely mechanical. Some builders of iron bridges even go so far as to claim that there is no discrepancy in their work of over $\frac{1}{100}$ of an inch between diameter of pins and the eyes of the bars they serve to connect. While it is entirely possible to make such close fitting, it is very doubtful if it is ever done, since the erection of the bridge in place would be almost impossible. Uniformity in the length of parts is more important than such close fitting of the pins and eyes, since upon this uniformity depends a proper distribution of strain. This uniformity can be attained with a very high degree of accuracy by means of boring machines mounted on expansion beds and set to gauge. In addition to this, all eyes concentrating on the same pin may be, if desired, bored at the same time, in which case unswerving accuracy can be obtained. The manner competitive with the pin connection, so to speak, is that of the "screw-end" connection. While this method has answered a very good purpose, it must eventually yield to the pin connection, since it is impossible with it to secure a uniform distribution of strain on the several parts. Even assuming perfect threads, with nuts *exactly* matching, the adjustment depends upon the experience and judgment of the foreman erecting the work. He must depend upon feeling the proper tension through the wrench handle, or combine that with sounding the bars with a mallet, involving a nice discrimination of sound not apt to be possessed by mechanics. Another objection lies in the impossibility of tapping nuts to correspond with the threads of the screw. The dies will wear, no matter how carefully they may have been hardened, and the hardening process itself must affect the character of the threads. Practically, therefore, it is impossible to so fit nuts to screw-bolts as to insure a perfect contact among all the threads. The use of screw connections involves angle blocks in some form or other, and requires an awkward enlargement of the connection. In wrought and cast-iron combination bridges the objection is not so prominent, as the skew-backs form part of the top-cord casting. But in those "wrought-iron" bridges where screw connections are adopted, they must have a casting between two contiguous chord sections, or an angle block resting *upon* the top chord This last is a bad arrangement, since the horizontal components of the diagonals act upon the *surface* of the chords instead of over the whole cross-sectional area. In the case of castings between the wrought-iron chord sections, called joint boxes, the skew-backs must be provided for by having hollow cheeks on the *sides* of the joint boxes, through which the diagonals pass. This is a most unsightly form, besides throwing cross strains on the cast iron, which it is, of course, important to avoid. The caps and bases that are involved in all forms of connections in wrought-iron bridges are usually of cast iron, but the tendency is in the direction of wrought-iron ones, and naturally so, since, if wrought iron is better than cast iron in all structures exposed to vibratory strains, it should be used throughout, and preserve the integrity of the design. It is hardly fair to style a bridge a wrought-iron one, and yet make such important parts as the caps and bases of cast iron. It is true that there are certain sectional forms of wrought iron which it would be impossible to unite—unless at a very great expense of framing and forging—without the use of cast-iron joint boxes; but there are many forms which admit of a cheap, neat and compact bearing of wrought iron, which, of course, involves a pin connection. With such bearings, a concentration of detail upon the pin can be had, transferring the forces in action at once through the axial lines, as it were, of the various portions of the frame, which is the most favorable condition possible.

ALF. P. BOLLER, C. E.

New York, January 21.

THE GAZETTE AND THE GAUGES.

An engineer now resident in California, who has had a large experience in railroad and other engineering, writes to us as follows:

"I was exceedingly interested in the articles discussing the merits and demerits of the narrow gauge. When the matter was first broached, I read with much curiosity several articles from Fairlie and some by a California engineer who had personally inspected the Festiniog road. With a cordial disposition to welcome the latest improvements in engineering which could be fairly proved up by judicious experiments and discriminating logic, yet I was never able to discover in any of their statements exactly how all their asserted economies in working expenses could be properly attributed solely to the narrow gauge. Indeed, Mr. Fairlie himself don't think the narrow gauge will win unless it has a 'bogie engine' made by Fairlie. Why those engines cannot be as well adapted to the 4ft. 8½in. gauge as to one of 3 feet or 2½ feet we are not told. The more I read the more I am inclined to adopt your view that the so-called economies of the narrow gauge must be set down among the things 'not proven.' I know very well that down in a mine on a two-feet gauge you can whirl a little narrow and short-coupled tram-wagon with loose wheels around a *very* sharp curve, and therefore I could easily presume that a narrow gauge would admit of much sharper curvature and consequently of somewhat cheaper grading in a mountainous country. But with that I could see there must also be used cars not only narrower but shorter and shorter-coupled and of lighter build, and consequently of less capacity. Still I could not see how an embankment of 15 or 20 feet high or a cut of the same depth should be reduced exactly in the proportion of 4.71 to 3, nor how the running gear should follow with the same ratio of reduction. I have not time here to go into the details of the argument. About two-thirds of the economies claimed can be effected *on certain small roads of short distance and limited traffic* by retaining the 4ft. 8½in. gauge and lightening the rails and rolling stock, and having less rolling stock on hand in proportion to the total of tonnage, and by using bogie engines, whether of Fairlie's make or other people's; and reducing the speed—in short, to use a sailor's phrase, by 'keeping closer to the wind.' I should like to see them prove why this cannot be done on the 4ft. 8½in. gauge as well as on a 3ft. gauge. But I doubt if the experiment would succeed on long leading lines where trade is subject to sudden accumulations of tonnage or demands rapid trains at short notice, and extra cars and engines for emergencies. I do not by any means believe that there is any such magic in the figures 4ft. 8½in., or 4.71, as to make that infallibly the gauge for all the world to the exclusion of every other. I prefer a wider gauge if I could separate the question from the works of the rest of mankind. But so many roads have already adopted the 4ft. 8½in. that the mere matter of avoiding change of cars and handling freight requires an adherence to the gauge of our neighbors. * * *

"I have a high opinion of your paper, as well of its editorials as for its communicated articles, and I think no American engineer should be without it.

"I send you herewith a copy of the greater portion of a letter lately received by me from a young engineer in Peru. You will observe that his railroad is invading the heart of the empire of the ancient Incas. The altitudes equal those of many of the higher peaks of the Sierra Nevada and the Rocky Mountains, and are almost double the highest pass on the Central Pacific. I am afraid the grades and curves will test the rolling stock pretty severely."

RAILROAD ENGINEERING IN THE ANDES.

[The following is a copy of the private letter referred to by our Pacific coast correspondent.]

ENGINEER'S CAMP, RIO HUALLATA,
AREQUIPA & PUNO RAILROAD,
PERU, October 15, 1871.

DEAR SIR: I obtained employment immediately on my arrival in this country, and commenced operations as resident engineer of the Arequipa section of the Arequipa & Puno road. Close to the town a bridge, 1,500 feet in length, was being built where the line crosses the Rio Chile. Attending to the foundations, etc., of this bridge was about all I had to do for some two months. The height of the bridge above the bed of the stream is 60 feet; span across the river, 125 feet; the rest in spans of 30 feet. A temporary wooden trestle bridge has been put up. The bridge finally will be of iron. Style, plain girder and brace; built by the Baltimore Bridge Company.

As soon as the temporary bridge was completed, I was sent up here as division engineer to locate the "middle" or "summit division" of the line, nearly eighty miles in length. We have got through with the worst part of the work, and I think in another month will have all the field work done. We commenced at an elevation of 13,400 feet. Our grade line yesterday evening was 14,510 feet, and the greatest elevation on the division and on the line will be about 14,600 feet above the sea level.

This is one of the roads being built by Mr. Meiggs under contract with the Peruvian Government, and is considered to be at present *the* road of the country. It will terminate at Puno, on the shore of Lake Titicaca, on the eastern slope of the Cordillera. Distance from Arequipa to Puno, by the railroad, 220 miles, Arequipa being already connected with the coast by a road, completed and in operation, 100 miles long. The style of the road is 4ft. 8½in. gauge; 14ft. road-bed; rails about 70 lbs. to the yard; fish-plate joint; sleepers, two feet in the clear; engines, 6-wheeled (Rogers manufacture), weight from 35 to 40 tons.

Our limits for location are 4 per cent. grade (211 feet per mile) and 6-degree curves. [He afterward speaks of 16-degree curves.] The grades here are counted by so much per cent. or rise in a hundred feet. With these limits, the country is so rough that we have some very heavy work. The First Division has the heaviest work, where cuts and fills of 100 feet and over are of no uncommon occurrence. One fill alone has 175,000 cubic yards. I saw a place on the Lima & Arroya road where, according to the located line, there was to be a fill of 225 feet. So far, our heaviest work is from 35 to 40 feet; but we changed the line from the preliminary in one place, and escaped two fills that were estimated at half a million yards. Sixteen-degree curves looked very sharp when I first commenced locating, but I have got used to them now.

Up to present date I am not very favorably impressed with the country. I have not yet been to Puno, and don't know what the resources of that part of the country may be; but a more desolate, barren waste than that through which we are now locating could scarcely be conceived, and the climate is the worst I have ever experienced. The nights are extremely cold, and during the day we have a wind that cuts the skin off your nose, lips and cheeks as effectively as if it had been done with a keen razor. My face got so bad at one time that I had to go to Arequipa and stay there several days to give it a chance to heal up. This only applies to the extreme elevations, where we are now. In Arequipa and nearer the coast the climate resembles very much some parts of California.

Pullman to the Rescue!

TO THE EDITOR OF THE RAILROAD GAZETTE:

In the still silence of the night in a snow bank, my indolent carcase reposing at full length on the voluptuous softness of a Pullman upper berth, thoughts of the past came stealing o'er me. A coarse, vulgar, matter-of-fact specimen of the genus homo, far beneath me, broke in upon my reverie by asking if I had heard of the late accident at ——, where a sleeping car had been overturned, and how I would have felt had I at the time been sleeping innocently in an upper berth. The fellow was a beast. He set me a thinking and a quaking, so that I slept no more that night. The result of my mind's travail is this: Pullman cars always being in the rear of the train, in case of a run off, are liable to upset. Now, when the car turns over, the occupants of the upper berths are thrown violently down, and can hardly escape severe injury. Could not Mr. Pullman invent some means of keeping the wretched man in his berth, or, at any rate, of breaking his fall? It is a difficult job, I know, but is worth some attention.

Yours truly, HINDOO.

Sleepy Hollow, February, 1872.

Train Dispatching.

DES MOINES, February 10, 1872.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of February 3 your contributor who signs himself "A Hindoo" enlarges somewhat on the movement of trains by telegraph in India, and condemns the system in use on American roads as being inferior in safety and dispatch of business to the Indian system. I take issue with him on this point. It may be that his conclusions may have been drawn from a defective execution of the system and not from any fault of the system itself. I feel satisfied that facts will bear me out in the assertion that there is less liability to accidents and delays on our best managed railways than in doing the same amount of business by time-card rules or by the Indian system as described. There are but few persons not connected with the management of railroads who realize or understand the important influence a prompt and reliable system of train dispatching has on the rolling stock of a railroad, especially when it is crowded with business beyond its capacity. There are but few accidents that are caused by the direct fault of the movement by telegraph; while the numerous accidents that are and can be prevented by a wide-awake and experienced train dispatcher do not come to the notice of any one outside of the management. In America the system is to put certain divisions of a railroad under the charge of a dispatcher and centralize the direction of trains under one head. A correct and reliable record of the movement of all trains is kept by the dispatcher, and, if the person who fills that position understands his duties, I cannot see how such a system can be improved by putting authority in station-masters at intervals of five or ten miles to direct the movement of trains. On the contrary, it would create nothing but confusion.

I do not claim by any means that our system is perfect, for it is yet in its infancy and there are many reforms and improvements to be made; but I do claim that we can attain our object by adopting a higher standard of experience and education for all men connected with the movement of trains, at a far less increased expense than by any other. Accidents that result from movements by telegraph are not so much the fault of the system as they are violations of orders and rules. I would be glad to have the gentleman state his specific objections to the American system, and I will endeavor to meet them. Such a discussion could do no harm, and might benefit many. AMERICA.

George Hudson.

We have to record to-day the death of one whose name has been long used to point the moral of vaulting ambition and unstable fortune. A new generation has arisen since George Hudson was the railway king. Those to whom his face and figure and voice were familiar, who added to the crush at his entertainments, and listened to or retailed the anecdotes respecting him, are to be found only among the middle-aged members of the House of Commons or the most seasoned frequenters of London society. There was a time when not to know him was to argue one's self unknown; now he is only a tradition. It often happens that a man who has been famous in the past emerges from a long obscurity in the newspaper paragraph which announces his death. The first impulse is to exclaim, "Has he really been alive all this time?" Some such thought will occur to many who remember the George Hudson of the old times, what he did and what was done for him, his wealth, his grandeur and his fall. His social preceded his political disappearance. He was a member for Sunderland for years after he ceased to be the railway king, the arbiter of capitalists and the companion of the great. His power culminated at the time of the railway mania in 1845-6. He was dethroned like so many other sovereigns in the revolutionary period which began with 1848. His wealth, enormously exaggerated by report, has passed away, and a short time since a subscription was raised to buy an annuity for him. The judgment of the world on his moral conduct was such that his social and financial influence passed away also. Had it not been so he might have made another fortune. To the last he was energetic and enterprising, even to audacity. To the last no scheme would have deterred him by its difficulty, no speculation by its danger. But after his great fall he was obliged to content himself with an obscure and limited field. At one time he was a good deal abroad, and was understood to be concerned in continental enterprises. From the sequel we must assume that, so far as he was concerned, they were unsuccessful. The first tide in his affairs led on to fortune, but he was afterward stranded, and neither he nor his schemes could float. A quarter of a century ago he turned all that he touched to gold; in after years his name was enough to wither the prospectus on which it was printed. The world which blindly trusted him, which cringed to him and flattered him, avenged itself by excessive and savage reprobation. Its anger and contempt were increased by the discovery that he had really nothing left. "See how ill-gotten gains vanish!" exclaimed these moralists after the events. Had he managed to keep one or two hundred thousand pounds, he would not have been so guilty. What a man can hold, the world assumes that he has a right to hold. Besides, his credit as a successful man would then have stood its ground, and success covers a multitude of sins. It would be ridiculous to apologize for him, and to deny his faults merely because he is dead; but it is fair to notice that to the last he had warm friends, and that these were among the men who knew him longest and best.

The history of the railway enterprise in England is a strange one. This country has the honor of giving birth to that famous invention which has revolutionized the habits of men and the relations of kingdoms. No change in the history of the world is greater than the change which was effected when George Stephenson's locomotive first ran upon rails with passengers behind it. Yet for many years this great discovery was but little applied in the country which produced it. In the United States it was seized upon at once, and in a rough way Americans intersected all the Northern States with railways. Here there was a tremendous conservative influence against it. England was too beautiful a country to be cut up by iron abominations. Railways would ruin the coaching interest, annihilate our unrivaled breed of horses, put an end to hunting and other country sports, produce a democratic mixture of classes, poison the air and destroy vegetation by the noxious effluvia of the locomotives. Almost every nobleman and gentleman was ready to oppose the construction of any such works in his neighborhood, unless, indeed, he was enormously compensated for the land taken, and then his scruples vanished wonderfully. Our seats of learning and chief schools protested energetically against the sacrilege of bringing a railway within miles of them. The consequence was, that for ten years after the principle was scientifically demonstrated the advance made was small. Some main lines were authorized, but beyond this all was timid, tentative and feeble. It is a characteristic of the English people that, though they are slow to adopt a new thing, their activity and enthusiasm are wonderful when they do take to it at last. So it was with railways. It was suddenly discovered that we were neglecting the most important discovery of the age, and letting our American rivals get before us. Then came the railway mania. The country was quiet and prosperous, there was a good deal of money to invest, and it all went in railways. The soundness of the policy which Sir Robert Peel supported with all the weight of his influence has been seriously questioned. He decided on free trade in railway enterprise—that is to say, unlimited competition between projectors and companies, fierce Parliamentary battles, useless branches, suicidal rivalry in traffic, and all that chiefly marks the railway system of England up to the present time. Undoubtedly the non-interference of government allowed the activity of speculators full play, and England obtained a complete series of railways at an earlier period than would otherwise have been the case. The advantage thus obtained over the continental nations has been, no doubt, most important. But at what a cost all this was done! Consider the sums wasted in British railways, and judge whether it can be said that the system adds to our reputation as a prudent and business-like people.

George Hudson was the creature of such a system; he made the best of it, and turned it to account for himself and the nation. It is impossible to deny that he did great things to develop the railway system in the north of England, and to direct the national enterprise into this channel. The north country people stood by him for years, and his constituents sent him to the House of Commons till 1859. He was a man who united largeness of view with wonderful speculative courage. He went in for bigger things than any one else. He took away people's breath at first, but he soon succeeded in persuading them that the larger the project and the bolder the scheme, the more likely it was to pay. He showed his confidence by investing more largely than any one else, and taking upon himself all sorts of responsibilities. This is the kind of man who leads the world. Let him have one success, and the people will follow him anywhere. Mr. Hudson was for two or three years looked upon as having the key of untold treasures. The world will court rich men, but there is one whom it will court still more, and that is he who is supposed to be able to make all men rich. This was Mr. Hudson's position. People saw a boundless extension of railway enterprise and thought that George Hudson was to be the despotic ruler of it. Everything was gradually but surely to be brought under his influence. Hence they went wild about him. The richest men in England subscribed £20,000 as a tribute to his services to the public, as if a colossal fortune were not sufficient recompense for his devotion. When he was elected for Sutherland in 1845 the event was judged to be of such public interest that a special train was sent to London with an account of the proceedings, and traveled during a part of its journey at the rate of 75 miles an hour. The events that produced his decline and fall are too well known. His own private affairs were found to be inextricably involved with those of the companies which he ruled, and legal proceedings, which endured for years, overthrew his credit and despoiled him of his wealth.—*London Times.*

Close Platforms in Ohio.

The Ohio Legislature has adopted a resolution requesting the Railroad Commissioner to report if all the railroads of the State have complied with the law which requires passenger cars to be connected by aprons or bridges, which, by the way, they have not, the more is the pity.

RAILROAD GAZETTE

Published Every Saturday.

A. N. KELLOGG, *Proprietor.*

S. WRIGHT DUNNING AND M. N. FORNEY, *Editors.*

W. H. BOARDMAN, *Acting Publisher.*

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Editorial Announcements.

Address.—The RAILROAD GAZETTE *will be printed for the present in New York; our printing house in Chicago having been destroyed. All communications, therefore, whether editorial or business, should be directed to the New York office. The proprietor will receive subscriptions and advertisements at his office in Chicago, Nos. 63 and 65 South Canal street, but letters should be addressed to New York.*

Correspondence.—We cordially invite the co-operation of the railroad public in affording us the material for a thorough and worthy railroad paper. Railroad news, annual reports, notices of appointments, resignations, etc., and information concerning improvements will be gratefully received. We make it our business to inform the public concerning the progress of new lines, and are always glad to receive news of them.

Articles.—We desire articles relating to railroads, and, if acceptable, will pay liberally for them. Articles concerning railroad management, engineering, rolling stock and machinery, by men practically acquainted with these subjects, are especially desired.

Inventions.—No charge is made for publishing descriptions of what we consider important and interesting improvements in railroad machinery, rolling stock, etc.; but when engravings are necessary the inventor must supply them.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

RAPID TRANSIT IN NEW YORK.

That the city of New York is sorely in need of greater facilities for transporting its people to and fro is a fact which is painfully impressed upon all who have occasion to come "down town" in the morning or go "up town" at night. Every person who discusses the question is fully satisfied that "something must be done," but what that something is few, excepting the very ignorant, self-conceited or self-interested are prepared to specify. There are, of course, innumerable wise men with projects, all cut and dried, which they have evolved out of their inner consciousness, and in which the conditions to be fulfilled and the ends to be accomplished are ignored in the most ingeniously ingenious way. About sixty different plans were proposed to one of the boards of engineers which have reported on the subject, and at each session of the Legislature representatives of half a dozen at least of these plans clamor for charters or some kind of legislation to enable them to put their projects into execution. Boards of engineers are either appointed or extemporized and examine in some fashion, we suppose, and report upon the plans submitted to them; and the advocates of the respective schemes forthwith publish such reports in attractive pamphlets and use every other means within their reach to influence public opinion and legislation in their favor.

Any one interested in this subject and disposed to procure accurate information will find that the latter is not very accessible. In fact, any person who studies the subject will be surprised to find how big it is, and how difficult it is to get an entirely comprehensive view of it. If he visits any of the projectors of any of the plans he will hear little excepting special pleading in favor of special projects, and will find that the accurate information existing in relation to the subject, if it exists at all, is inaccessible. That the subject should be very imperfectly understood, under the existing condition of things, is quite natural; as nearly all those who have given much time and thought to its consideration have done so because they have had axes of various degrees of dullness to grind, and have besought the Legislature to supply motive power to turn the stone.

With the exception of securing honest municipal government, there is perhaps now no other subject of equal importance to the city of New York to that of having some efficient means of traveling up and down the island quickly and comfortably. The business and social relations of the city would be influenced by it more than by any other cause. The expense of living would be materially reduced; the population—now sadly overcrowded in some districts—would be distributed over a larger area, and the comfort and health of the whole community be thereby improved, and the population thus be very much increased. One has only to consider the influence which would thus be exerted to indorse most heartily the strong popular sentiment which is now so prevalent "that something ought to be done." To determine, however, what is *the best thing to do,* is not so simple a problem. We have a city with nearly a million of population, and suburban towns with nearly a million more, for whom the means of rapid transit in New York must be supplied. We have centering here at least four of the great railroad systems of the country, each of which has some thousands of miles of connecting roads. New York is the great focus at which all these converge, and is as it were a hiatus in the system. The numerous lines of foreign steamers also empty their streams of travel into it, and all help to swell the great aggregate of population for which facilities must be supplied by any system of rapid transit. To do this and devise a plan which will accommodate and adapt itself to all these various and isolated interests and conditions is a very difficult problem.

When, besides these elements, which refer only to the work to be done, we are obliged to take into consideration the means of doing it—which latter involve some very grave engineering and financial questions—we have altogether a subject which should be examined very carefully before any decided opinions are formed or expressed in relation to it. At the present time the only active projectors of any system of rapid transit are those who have some selfish interests to serve, and the question with such is not which is the best plan, but which will afford those who build it the best opportunity of making money. That "something should be done" all are agreed; the question before the public and to be determined by the Legislature now is, *what* should be done, or which plan, if any, will best accomplish the desired purpose?

That this can only be decided by experts we think is sufficiently obvious; and that the present plan of proceeding in the Legislature at Albany is not likely to evolve much, or at least sufficient, information regarding the subject is, we think, only the natural result which must follow when one set of men who are ignorant question another set who are equally so, or what is perhaps worse, are interested in *not* knowing or in misrepresenting. Every professional or business man knows, too, how difficult it is for persons who are not experts to comprehend the vital questions involved in any technical subject. The committee of the Legislature at Albany, therefore, with every inclination and facility for thorough investigation, will not be likely to evolve much valuable information by "hearing" the various delegations who represent the different interests which are now so clamorous. The subject is one which an experienced engineer even could understand only by the expenditure of much time and labor in studying it. Surveys and calculations must be made, experiments tried, precedents consulted, and suggestions considered and compared, before an intelligent opinion can be formed, even by the ablest men. The labor and expense involved in doing this is so great that no man whose time is valuable would give it without liberal compensation. When the magnitude and importance of this work and the disastrous results which would follow any blunders or mistakes are realized, we think that all disinterested citizens of New York will see that the occasion justifies a liberal expenditure of time, money and skill in investigation. This will not be given to it voluntarily nor disinterestedly, unless it is done by the authority and at the expense of the city or State. The wisest policy for the Legislature to pursue therefore, we believe, would be that which we have suggested before, viz., the appointment of a board of commissioners consisting of able and *experienced* engineers, with a few property holders and lawyers, to investigate the whole subject and make an exhaustive report thereon.

That such investigation is very much needed is obvious from some of the statements which are made in the printed documents circulated by the advocates of the plans proposed. As an example, we quote from a report said to be made by a "board of engineers on the subject of rapid transit:"

"The motive power is assumed to be steam; and, to avoid the exhalation of the gases of combustion, the locomotives may take their supplies of steam at certain localities where it will be generated in stationary boilers. For the same reason, the exhaust steam should not be discharged into the tunnel, but should be condensed in cold water tanks attached to the locomotives.

"It is alleged that compressed air, of the same pressure as the steam, might with advantage be substituted for the latter, the exhaust of which into the tunnel would be unobjectionable. This kind of power has been successfully applied for many years at Mont Cenis and Hoosac tunnels; but further examination would be required before it should be determined upon as a substitute for steam power."

These statements were made in a report on what is known as the "Arcade Road," an illustration of which we publish on another page. It is proposed to construct this under Broadway and support the roadway of the street above on arches and columns. Now it is obvious to a very casual observer, that if ordinary locomotive engines are used there must be great difficulty in ventilating the "Arcade" below, if, as would be the case, trains run frequently. This difficulty was anticipated in the report, and it is proposed therein to obviate it by the expedients named, both of which are entirely experimental in character, and one at least is demonstrably impracticable. In other words, an expenditure of many millions of dollars is recommended in the construction of the road, and no certain means of operating it is provided. We do not, nor is it necessary to, definitely pronounce both the schemes as impracticable; but what is very certain is that neither of them has been developed beyond the experimental stage; and few experienced engineers without much more careful investigation would be willing to risk their reputations on their success. The facts are, probably, that those who prepared the report referred to did not and could not give it the time and consideration which the subject demanded, and, until experienced engineers are employed and *liberally paid* for their time and services, no report of much value can be produced.

It is related of one of the earlier projectors and stockholders of the elevated road, that some one inquired of him who their engineer was. He replied, "D——n engineers; we have employed a *practical* man to build our road." The said practical man ignored the laws of statics and dynamics, and built a road on which other "practical men" are now afraid to ride.

Efficient provision for rapid travel in New York is now too important to risk any blunders like that of the elevated road, and they can only be avoided by securing the services and following the advice of the ablest and most experienced engineers.

NEW ORLEANS AND ITS RAILROADS TO THE WEST.

By the recent arrangement between the New Orleans, Mobile & Texas Railroad and Mr. Charles Morgan, who operates the Louisiana & Texas Railroad from New Orleans to Brashear, 80 miles, the two companies will have one line in common west of Vermillionville, La., which is about 70 miles distant both from Donaldsonville and Brashear, the termini of the two roads. The contract made calls for the completion of the line from Brashear to Vermillionville, which is the route of the Morgan road, and from Vermillionville to the Texas line, the route of the New Orleans, Mobile & Texas road, by March 1, 1873, and does not provide for the construction of the latter from Donaldsonville to Vermillionville. The preference for the lower route is, it is reported, partly because an old grade exists for a great part of the distance between Brashear and Vermillionville, and partly because on this line the ground is high and dry, while on the upper line the numerous swamps and bayous will require a large number of bridges and much costly trestle work which would delay the completion of the line to Texas.

The direction of the line from Brashear to Vermillionville is nearly due northwest; thence to Lake Charles, 75 miles, it is due west, and from Lake Charles to the Sabine River at Jefferson, 35 miles, it is southwest. At the latter point connection is to be made with the Texas & New Orleans road, which was in operation before the war to Orange, on the opposite bank of the Sabine, but during the war was apparently left to the elements, and perhaps had a portion of its rails removed; at least at its close its chief value was for its road-bed, which also needed important repairs. Since that time it has been put into condition from Houston eastward to West Liberty, 35 miles, leaving 73 miles to be rebuilt in order to complete the connection with the Texas system of railroads.

The impression seems to have been conveyed that the New Orleans, Mobile & Texas Company will soon complete its line to Vermillionville, and that by some arrangement both lines will share impartially the through traffic between New Orleans and that place. This is a

somewhat remarkable arrangement to make, as it is virtually making a channel with one tributary and two outlets. It is, we think, quite possible that the New Orleans, Mobile & Texas Company will devote its energies rather to an extension northwestward, where it will find a field entirely unoccupied as far as Shreveport and there connections which promise to be of great value, and moreover, opportunities for securing branch lines which in all Northern Louisiana would find it the most accessible and natural outlet to New Orleans. Vermillionville, however, can readily enough be made a point on such a northwestern line, and, we believe, it has always been intended to make that the point of junction of the western and northwestern lines.

The completion of a line from New Orleans to Texas will be an event of importance, especially to New Orleans. That city has been built up by and is now chiefly dependent upon the river traffic, for which it has extraordinary advantages, as steamboats from the Mississippi and all its tributaries, embracing probably 8,000 miles of navigable streams, can unload at its levees. But in these days the railroads have either greatly decreased the traffic on these streams, or they have given it new outlets, chiefly to the East, so that a much smaller proportion than of old of the river business has any necessary connection with or dependence on New Orleans. Cotton, for instance, which at one time could reach the consumers only by way of the mouth of the Mississippi, is now frequently shipped *up* stream, and moved eastward from Louisville, Cincinnati or other points by rail. And this change affects New Orleans more as a distributing than as a receiving point. Merchandise much more than agricultural products seeks the quickest line, and most of the country which in former days purchased supplies in New Orleans now has rail connection with the great commercial cities of the East, and, very likely, indifferent or poor rail connection with New Orleans.

It is evident that this great city of the gulf cannot longer depend upon its exceptional position at the outlet of the river system of the Mississippi valley. That position and the accessibility of such an immense fertile territory by cheap natural water routes are extraordinary advantages, it is true: but they are not enough. Supplement its river system by a well-devised railroad system, and New Orleans may renew its youth and increase in population and business as it was doing twenty-five years ago. Hereafter it must grow much as other cities grow, by securing the traffic of the territory which it can serve better than can other places. In this case, as with most American cities, this territory is that which lies west of it. It is there, too, that the greatest desirable territory remains to be occupied and cultivated, and it is with this district, embracing West Louisiana, Southern Arkansas and the great State of Texas, that New Orleans should make every effort to connect itself by direct and cheap routes of transportation. So far it has only two railroads west of the Mississippi, one of which has been in operation but a few months, while the other is but eighty miles long.

The consequence is that a great part of West Louisiana is almost inaccessible and therefore does not grow, is not cultivated, sends very little produce to market and buys very few goods. Texas, which is growing faster than any other Southern State and seems bound to have a large population and send enormous quantities of produce to the market, for the most part can reach New Orleans only by sea; and, when produce has once reached a seaport, it is not likely to be landed short of its ultimate destination. A system of lines west of the Mississippi will do more for New Orleans than a gridiron of tracks in its interest over Mississippi, Alabama and the country north and east of it. The latter are or can be brought nearer the consumers of their produce than is New Orleans itself; the former cannot. Whatever New Orleans may gain from the East it will be likely at some time to lose; whatever it may get from the West it will be pretty sure to keep.

St. Louis and the Missouri, Kansas & Texas Railway.

The Missouri, Kansas & Texas Company has made an arrangement, it is reported, by which it will construct on the charter and substantially by the route of the St. Louis & Fort Scott Company a railroad from St. Louis west by south to Newton, a station on its Sedalia & Fort Scott line 40 miles southwest of Sedalia. This will make a line 200 miles long, or a little more, and will be hardly anywhere more than 25 miles south of the Missouri Pacific and for a considerable distance much nearer. About 80 miles will be in the valley of the Osage River. The route of the proposed Laclede & Fort Scott road will be nearly parallel for most of the distance and about 35 miles south. In this way the Missouri, Kansas & Texas will have a line between St. Louis and Fort Scott only about 280 miles long, that is, just about the distance between St. Louis and Kansas City. This, however, will not provide an outlet for the company's line from Holden to Paola, and if a branch be made from Holden to Newton for this purpose, while good enough perhaps for a St. Louis outlet, it will be exceedingly indirect for a Chicago outlet.

The company's northeastern extension through Boonville would now appear to be intended solely as a Chicago outlet.

Questions by Committees of the Master Mechanics' Association.

The committees on "Boiler Explosions" and "Uniform System of Computing Mileage of Engines Doing Switching Service" have issued the following circulars of inquiry, which, it is hoped, all members will answer as promptly as possible, there being now but three months before the convention will be held at which the reports must be presented:

BOILER EXPLOSIONS.

The undersigned committee, to whom was referred the subject of "Boiler Explosions," at the last annual convention of the American Railway Master Mechanics' Association, would call your attention to the following questions, and such other information upon the subject as you may be pleased to give. And we earnestly request your early consideration and reply to the same.

1. Has an explosion of locomotive or other boiler ever occurred under your charge?
2. If so, what part gave way first in your opinion?
3. How long had the boiler been in use?
4. Was cylinder part of boiler free from mud or sediment?
5. If the boiler was ruptured in fire-box, was it caused by the deposit of mud or scale?
6. Was the water in general use hard or soft?
7. Did the edge of fractured sheets have the appearance of good iron?
8. Were the sheets torn across or lengthwise?
9. What pressure was allowed to be carried on the boiler?
10. Was boiler supplied by pump or injector or both?
11. What in your opinion was the cause of explosion?
12. Give us your views of causes for explosions of boilers in detail?

Respectfully yours,

R. D. GRANT,
Rockford, Rock Island & St. Louis Railroad,
T. G. GORMAN,
Toledo, Wabash & Western Railway,
JOHN CALHOUN,
North Missouri Railroad,
Committee.

Address R. D. Grant, Beardstown, Cass County, Ill.

COMPUTING MILEAGE OF SWITCHING ENGINES.

The committee appointed by the American Railway Master Mechanics' Association to report on a "uniform system of computing mileage of Engines doing Switching Service," would respectfully ask replies to the following questions:

1. What mileage do you allow engines doing switching service per hour or per day of twelve hours?
2. Do you allow only for the miles actually run, as near as can be ascertained, or do you allow mileage in part for the *time* that engines are on duty; and how much per hour for the latter?
3. If mileage is computed by the hours of service, do you make a difference in such allowance between engines making runs of one mile or more at a time, and those doing duty in a yard where the runs are very short. If so, what difference per hour?
4. Do you allow mileage for the distance run by engines empty between round house and the point of taking or leaving trains?
5. Do you allow mileage for such switching as may be required of engines running through trains, in making up and in distributing their trains at way stations, during the trip? If so, how many miles are allowed for such service per day, or per 100 miles run, in addition to the regular mileage of the train?
6. What system of computing mileage would you recommend as the best for engines doing switching, in order that uniformity in this particular may be arrived at by all roads?

Your committee will gladly hear any suggestions on this subject that you may make.

R. WELLS,
Jeffersonville, Madison & Indianapolis Railroad,
E. D. PALMER,
Pittsburgh, Cincinnati & St. Louis Railway,
J. H. SETCHEL,
Little Miami Railroad,
Committee.

Please address replies to R. Wells, Jeffersonville, Ind.

St. Louis Wheat Traffic.

We copy from the St. Louis *Republican* tables showing the receipts of wheat in that city from different routes for the crop year 1870–71 (July to July), and for the seven months from July 1, 1871, to February 1, 1872, to which we have added a column of the percentage of the total receipts of the crop year mentioned to the total receipts:

	Crop year 1870–'71. Bushels.	Percentage.	From July 1, '71, to Feb. 1, 1872.
Missouri Pacific	1,602,108	24.55	1,459,689
Atlantic & Pacific	257,202	3.9	279,189
North Missouri	933,236	14.31	712,366
St. Louis & I. M.	25,237	.4	9,141
Rockford, R. I. & St. L.	196,408	3.	224,.96
Toledo, W. & W.	16,745	.25	174,890
Chicago & Alton	154,563	2.3	399,333
St. L., V., T. H. & I.	44,856	.68	65,988
St. L., T. H. & Ind.	108,713	1.66	158,419
Ohio & Mississippi	28,901	.36	9,981
St. L., B. & S. Ills.	6,069	.1	12,785
St. L. & Southeastern	3,431	.05	810
Upper Miss. River	1,457,541	22.5	457,947
Lower Miss. River	205,501	3.15	43,988
Missouri River	940,636	14.45	244,319
Illinois River	536,197	8.22	315,029
Other rivers	7,473	.12	.....
Total	6,519,767	100	4,568,680

From this it appears that for the year reported nearly one-half (45¼ per cent.) of the wheat receipts of St. Louis came from the Missouri River and the country south of it; nearly two-fifths (36¾ per cent.) from the country north of the Missouri and the Upper Mississippi, and just about one-sixth (16¾ per cent.) from the railroads east of the Mississippi and the Illinois River. A little more than one-half (52 per cent.) was received by railroad—the rest by rivers.

The receipts for the seven months of the current crop year show very different proportions, less than one fourth of the total receipts having arrived by river, and less than one-third the amount of river receipts for the twelve months preceding. On the other hand all the railroads east of the Mississippi, except the Ohio & Mississippi and the St. Louis & Southeastern, which have never brought St. Louis any considerable quantities of wheat, have brought within the seven months of the current crop year much larger amounts than for the entire previous year, amounting in the aggregate, together with the Illinois River receipts, to very nearly 30 per cent. of the total receipts, against 16¾ per cent. for the year previous.

Chicago Railroad News.

Suspension of Grain Receipts.

The receipts of all the grain-transporting railroad companies terminating in Chicago have been diminished for several weeks past on account of the lack of storage facilities in this city. All the warehouses are full and will remain so until the opening of lake navigation—indeed, until the vessels now in the harbor shall be able to make one round trip from the city and back. The warehouses are full and most of the vessels in port capable of being loaded with grain are also full. Inquiry in regard to the movement of grain seems to indicate that it is generally held in the granaries of the producers, awaiting the time when the railroads shall be able to ship it again, although there is little doubt but that competing east and west lines crossing Illinois are shipping more grain east than usual this winter.

Closing of the Mississippi as Affecting Railroads.

The weather has been so cold during the last two or three weeks that railroads dependent upon ferries to cross the Mississippi have been much impeded in their operations by ice. The river at Cairo—quite an unusual thing—has been blocked with ice for some time, obstructing and blocking up the lower terminus of the Illinois Central Railroad, and for some time freight was not transported across the Mississippi at St. Louis on account of the obstructions from ice. Passengers only crossed the river at that point.

Aside from these obstructions, however, the railroads have had little to contend with within a radius of 200 or 300 miles from Chicago. There has been comparatively no snow—not enough to keep the snow plows in good working condition. Business has been good all winter, both in freight and passengers.

Chicago & Alton.

This road shows the following as the receipts for the month of January, 1872, comparing favorably with the same month of 1871: 1872, $372,315.17; 1871, $353,235.43; increase, $19,080.28, or 5⅜ per cent. And this notwithstanding that the last week in January showed a decrease of $16,044.74 from the receipts of the corresponding month last year; the decrease being attributable to the closing of the Mississippi by ice.

New Freight House.

The (Star) Union Freight Line Company has perfected plans for a huge freight depot on the corner of Canal and West Van Buren streets. It is to be of brick, 400 feet in length by 40 feet in width. The walls will be 16 feet in height. It will front west on Canal street, and will have track space for 15 freight cars to unload at once. The work of building is to commence immediately on the opening of spring. Eighty feet of the front end of the building will be two stories in height, the second story being for the accommodation of the officers of the company. The business of the company has grown so rapidly as to make this building an absolute necessity in order to accommodate the present business, which has largely increased since the great fire.

Chicago, Danville & Vincennes.

This road has recently made close connections with Evansville on the Ohio, and Nashville, Tennessee, so that at present the distance from this city to Nashville is shortened 40 miles by this route. The company is now landing in Chicago 100 car loads a day of the Indiana block coal, which is used exclusively in this city for the smelting and working of iron. A prominent iron manufacturer of this city has stated that with this coal Chicago can reduce the Lake Superior ores at $7 per ton less than it can be done in Pittsburgh. If this be the case, there is every probability that the iron smelting business is bound to develop into very large dimensions within a few years.

Atlantic & Pacific.

This new company is engaged in the survey of the route from this city to the Mississippi. The survey will be completed in a week or so, and then it is promised that the work of grading will commence as soon as the frost is out of the ground. The company on the 3d inst. purchased about three entire blocks of ground on what has been known as Goose Island, a small island formed by a canal on the east and a bend, or rather bow, of the North Branch on the west. The company intends to erect its freight houses on this island and to construct during the coming season a large elevator on the ground purchased. The line of the road into the city will probably be on North avenue to the North Branch; thence across to the island above-mentioned; thence south along

the east side of the river to a point not far from the north entrance of the La Salle Street Tunnel.

City Draw Bridges.

The Board of Public Works of this city have awarded contracts for the reconstruction of nearly all the bridges destroyed by the fire. Nearly all these bridges will be of iron and incapable of destruction by fire. The iron bridges will cross the river at the following-named streets: Adams, Wells, State, Rush, Polk and North Halsted. These bridges are all in progress and will be finished in the spring or early portion of the summer.

Fox & Howard have the contract for sub-structures of the Wells and State street bridges, at the following prices: $15.50 a cubic yard for dimension stone, $16.50 a cord for rubble, $7 for spawl, and for the Wells street bridge $11,900 for the pile-work protection, the dock, the bridge-tender's house and the coffer dam foundation, and removing the same. The same prices were paid for the masonry on the State street sub-structure, but the other work will cost $14,450. The Keystone Bridge Company has the contract for the superstructure and approach of the State street bridge and for all the superstructure of the Wells street bridge except the part over the river.

Chicago & La Salle.

The Committee on Railroads of the Chicago Common Council will recommend a route for the Chicago & La Salle Railroad Company adjacent to the Chicago, Burlington & Quincy track. Within the last week or two a good deal of opposition has been developed on the part of the citizens to the route suggested a few weeks since on Twelfth street, Western avenue, York and Gurley streets. The committee will recommend the vacation of several streets in close proximity to the Chicago, Burlington & Quincy road, and which are practically about worthless as carriage-ways now, on account of their nearness to the Burlington Railroad track.

Engineers' Club of the Northwest.

The regular monthly meeting of the Engineers' Club of the Northwest was held on Monday evening, the 12th inst., at the Sherman House. A very interesting paper was read by Col. D. C. Houston on the theory of waves, particularly as relates to breakwaters and other structures.

Chicago & Northwestern.

This company will extend its Minnesota road, the Winona & St. Peter, next summer from New Ulm westward to the line of Dacotah Territory, a distance of 130 miles. The track will lie through a fertile prairie country, entirely uninhabited; but it is sure to be rapidly settled as the railroad line penetrates the country. The same company will also extend the Wisconsin Division from its present terminus at Menomonee to Escanaba, at the lower end of Green Bay, thus making a connection with the Peninsula Division, without the intervention of steamers as heretofore. The Northwestern Company is pushing the Madison Extension from Reedsburgh to La Crosse, and on Saturday, the 3d inst., let the contract for excavating the tunnels through the hills a short distance this side of La Crosse. The work of tunneling is to be begun immediately. The estimated cost of the work is nearly $500,000. The sides of the tunnel are through rock so friable as to require to be walled up. In order to get the work done as expeditiously as possible, the contracts for the three tunnels have been let to three different parties. Fox & Howard, of Chicago, have the contract for the first tunnel, 1,600 feet in length; L. Carmichael & Co., of Tama, Iowa, have the contract for the second, which is 1,500 feet in length; and Ellis & McDonald have the contract for the third tunnel, which is 3,400 feet in length. The latter gentlemen have received the contract for completing the grading to Trempealeau. The contracts are all to be completed within one year, and the road to be constructed to Trempealeau before the first day of next January, at which time the Chicago end of the road is to be joined to the Minnesota section, forming, with the new track which is to be built next summer west of New Ulm, a continuous line of road from Chicago to the boundaries of Dacotah Territory.

About three weeks ago Mr. John C. Gault, General Superintendent of the Chicago & Northwestern Railway, resigned that position, and the resignation was accepted by a meeting of the directors of the road, held about two weeks since. What were the reasons which led to the resignation have not yet transpired. It is sufficient to say, however, that probably no man connected with that railroad corporation will be more missed than Mr. Gault. He has been a prominent officer connected with the Northwestern ever since the consolidation of the Galena Division, the Dixon Air Line and the Wisconsin branches, and to his labors, undoubtedly, very much of the success of the Northwestern is due. Mr. Gault has not signified where he is going; but has announced that he is not going to retire from the railroad business, and is not to leave Chicago. Events will soon determine what new position Mr. Gault is to assume.

The gentleman who is to assume the position of General Superintendent is said to be Mr. H. H. Porter, who is one of the directors of the company, a member of the Executive Committee, and an intimate associate of the President. He has an intimate knowledge of railroad affairs, having been connected with different lines a large part of his life, at one time as General Superintendent of the Michigan Southern & Northern Indiana Railroad. Mr. Gault will perform the duties of the office until the installation of Mr. Porter.

On Monday last, the 12th inst., Mr. H. C. Hobart took charge of the Milwaukee Division of the Northwestern; while the Madison and Kenosha divisions were united into a separate working division, which is placed under the charge of O. Beardslee, as Division Superintendent, whose office will be at Madison, Wisconsin. Mr. Beardslee has been for some time connected with the road.

Illinois Central.

By a change of time which went into effect last Sunday, the St. Louis express, Springfield express and the Cairo mail leave two hours earlier than heretofore, at 7:30 in the morning instead of 9:30; and the St. Louis fast line and Cairo express at 8:15 p. m. instead of 7:10. The Gilman passenger leaves at 5:15 instead of 5:35 p. m. The Keokuk passenger leaves at 8:15 p. m. except Saturdays, when it is connected with the Gilman passenger, and on that day the latter train runs to Champaign. The arrivals are: St. Louis express, Cairo mail, Springfield express, 9:20 p. m.; St. Louis fast line, Cairo express, 7:45 a. m.; Keokuk passenger and Gilman passenger, 9:50 a. m. The Hyde Park trains leave at 6:10 a. m., 12:10, 3:00, 5:15 and 6:10 p. m.; and arrive at 8:00 and 9:50 a. m., and at 1:45, 5:15 and 7:35 p. m.

Michigan Central.

There is talk of removing the repair shops at Michigan City to Niles, 93 miles from Chicago, which can conveniently be made the terminus of a division, being 115 miles from Jackson, where the company has extensive shops, and also at one terminus of the Air Line Division.

Chicago, Danville & Vincennes.

Mr. Charles Greenwood, the General Freight Agent, announces that now and hereafter freight for this road will be received at the depot on the corner of Ada and Kinzie streets. The freight will be delivered as heretofore at the freight-house of Pittsburgh, Cincinnati & St. Louis Railway, corner of Halsted and Carroll streets.

Gairn Inspection Charges.

The Board of Railroad and Warehouse Commissioners at their recent monthly meeting found the receipts for inspection so much greater than the expenses that they ordered a reduction of about 20 per cent. in inspection fees, to take effect March 1. The charges are as follows: 25 cents per car-load for in inspection, in lieu of 30 cents; 40 cents per 1,000 for out inspection to vessels, in lieu of 50 cents; and 10 cents per wagon-load, or 30 cents per car-load, for out inspection of grain in bulk.

Chicago, Rock Island & Pacific.

On the extension of the Washington Branch of this road from Washington west to Sigourney, Iowa, 30 miles, the track is laid for eight miles west of Washington, and nearly the entire road-bed is completed. A station to be called "Allison" has been established between Washington and Sigourney.

Report of the Cleveland & Mahoning Railroad.

The Cleveland & Mahoning Railroad extends from Cleveland southeast to Youngstown, Ohio, 68 miles, with a branch from Youngstown northeast to Sharon, Pa., 13 miles. From the point of junction with the Atlantic & Great Western, at Leavittsburg, to Cleveland, 49 miles, it has a third rail, forming a 6-ft. track over which Erie and Atlantic & Great Western cars enter Cleveland. It has been for some time leased and operated by the Atlantic & Great Western. The report rendered to the stockholders under date of January 23 says that the rent has been paid satisfactorily and the permanent way somewhat improved during the year just expired. The rental was $274,272, and sundry amounts received from interest, land contracts and balances due from the Atlantic & Great Western, together with $68,341.11 on hand at the beginning of the year, swelled the gross cash receipts to $416,989.91, out of which were paid 7 per cent. dividends on capital stock, interest on bonds, sundry small expenses and cash for the redemption of $108,500 of bonds, leaving on hand a balance of $57,015. The President makes the following statement of the offer of Mr. James McHenry, presumably as the agent of the Atlantic & Great Western, to purchase the stock of the company:

In September last Mr. James McHenry, of London, made overtures for the purchase of a controlling interest in the stock of this company; and after considerable correspondence and exhibits furnished to him of our financial condition and prospects, a proposition was made to Mr. McHenry, by me, providing for the sale to him of the entire stock of the company, so far as the several shareholders should elect to accept the same; and the 20th of the present month was fixed as the date on or before which notice of full acceptance on his part of the provision of the proposition should reach me here.

This propositions has been duly accepted on the part of Mr. McHenry, and it is now open for the acceptance of such of our stockholders as shall so elect.

The arrangement, as it now stands, is as follows:

Mr. McHenry has agreed to purchase all of the stock of this company which shall be presented and transferred to him on the 18th day of April next, provided it shall include a majority of the stock. Messrs. Duncan, Sherman & Co., of New York, have agreed to act as his agents and receive and pay for the stock, according to the provisions of the proposition. The price of the stock to be, for every two shares or $100 of the same, $120 in currency, with interest thereon at the rate of 7 per cent. per annum from the date of the last dividend to the day on which the stock shall be delivered.

The proposition is, I think, too plain to require any explanation or comment.

Each shareholder will, of course, decide for himself whether he will accept or decline the proposition thus open to all on equal terms.

The directors personally expect to accept the proposition, and offer their own stock on the terms proposed.

And they have concluded to suggest for the benefit of the entire list of stockholders the following plan for carrying out the arrangement.

The plan they deem convenient, and also safe, as it retains the entire control of the stock in our own hands until its entire consummation.

The plan is as follows:

Each stockholder who desires to sell his stock on the terms proposed, to send his certificates of stock to this office, accompanied with a power of attorney authorizing Joseph Perkins, Trustee, to transfer the same.

The trustee will return a receipt for the certificates of stock, stating the conditions upon which they are received and held, and the price at which the stock is to be sold. And if, for any reason, the sale shall fail to be consummated, the power of attorney is to be canceled and the certificate returned to the owner.

These certificates should all reach this office on or before the first day of April next, to give the trustee time sufficient to perfect his arrangements for the final transfer, and for receiving payments for the stock on the 18th of the same month. If on that date the sale should be consummated, as proposed, the trustee will immediately mail to each stockholder a check for the amount which he may be entitled to receive for his stock sold.

The transfer books will be closed from the 1st of February to the 18th of April next, inclusive.

Report of the Philadelphia & Reading Railroad Company.

The main line of this railroad is only 98½ miles long, extending from Philadelphia northwest to Pottsville; but it has a great number of branches and leased connections, including no less than 27 different roads, and embracing about 500 miles of line, most of which penetrate the anthracite coal region.

The following is an abstract of the report for the year ending November 30, 1871:

The following tabular statement in detail, for each branch of traffic, shows the comparative results of the year's business:

1870.	
Travel, 446,328 passengers	$1,205,539
Merchandise, 1,754,943 tons	1,690,444
Coal, 3,750,990 tons	6,498,871
Mail	34,242
Miscellaneous	142,271
Gross receipts	$9,571,367
Gross expenses	6,508,786
Net profits	$3,062,581

1871.		Inc.	Per ct.
Travel, 719,845 passengers	$1,641,395	$435,856—	36 2-10
Merchandise, 2,305,234 6-20 tons	2,306,643	616,199—	36 5-10
Coal, 4,584,450 4-20 tons	8,287,393	1,788,423—	27 5-10
Mail	36,678	2,436—	7 1-10
Miscellaneous	290,884	148,563—104	4-10
Gross receipts	$12,562,843	2,991,476—	31 3-10
Gross expenses	7,555,903	1,047,117—	16 1-10
Net profits	$5,006,940	1,944,359—	63 5-10

The gross expenses, including renewal fund, rents of lateral roads, taxes, &c., in the year 1870, were 68 per cent. of gross receipts. Year 1871, were 60 1-10 per cent. of gross receipts.

The receipts and expenses, per passenger and per ton, including renewal fund, rents of laterals, taxes, interest, &c., based upon coal tonnage of main line only, have been as follows:

1870.		
Per passenger, cost	$1 84 8-10	Received, $2 70 1-10
Mdse., per ton, cost	68 1-10	Received, 96 3-10
Coal, per ton, cost	1 35 9-10	Received, 1 73 3-10
1871.		
Per passenger, cost	$1 68 5-10	Received, $2 28
Mdse., per ton, cost	68 9-10	Received, 1 00
Coal, per ton, cost	1 21 4-10	Received, 1 80 3-10

Including renewal fund, rents of laterals, taxes, interest, &c., based upon entire coal tonnage of the company, on main line and on the branches of laterals:

1870.		
Per passenger, cost	$1 84 8-10	Received, $2 70 1-10
Mdse., per ton, cost	68 1-10	Received, 96 3-10
Coal, per ton, cost	1 09 5-10	Received, 1 40 3-10
1871.		
Per passenger, cost	$1 68 5-10	Received, $2 28
Mdse., per ton, cost	68 9-10	Received, 1 00
Coal, per ton, cost	92 7-10	Received, 1 38 1-10

The result of the year's business, as condensed from transportation and income account, may be stated thus:

Receipts over cost of working the road		$5,006,940 47
Add:		
Amount heretofore deducted from income for account of sinking fund of loan matured and paid off July 1, 1871		56,980 00
		$5,063,920 47
From which deduct:		
Interest on bonded debt	$733,162 00	
Interest on bonds and mortgages	79,112 05	
Sinking fund loans, 1872, '74, '77	25,000 00	
		837,274 05
		$4,226,646 42
Cost of sundry new bridges	$112,772 22	
Cost of sundry new depots and workshops	97,871 87	
Cost of extension of wharves Nos. 7 and 8, Richmond	17,729 51	
		228,373 60
Dividend fund of 1871		$3,998,272 82
Amount to credit of reserved fund, 1870		201,914 57
Total reserved fund, 1871		$4,200,187 39
Out of which has been paid, in July, 1871, five per cent. dividend on $31,554,075.28	$1,577,703 76	
United States and State taxes	118,063 53	
		1,695,767 29
		$2,504,420 10
There has been declared a dividend payable in cash on the 15th of January, 1872, of five per cent. on the preferred and common stock	$1,567,075 28	
	$1,568,353 70	
United States and State taxes on dividend and on excess of net profits over dividends declared	136,510 44	
		1,714,864 20
Balance of reserved fund		$789,555 90

The managers call attention to the fact that tonnage, gross receipts and net profits all were greater for the year reported than ever before; they report the difficulties with the Workingmen's Benevolent Association by which mining was suspended for more than four months, and coal shipments almost entirely suspended. They believe that the injury to the workmen was such that they will not be likely to repeat the strike.

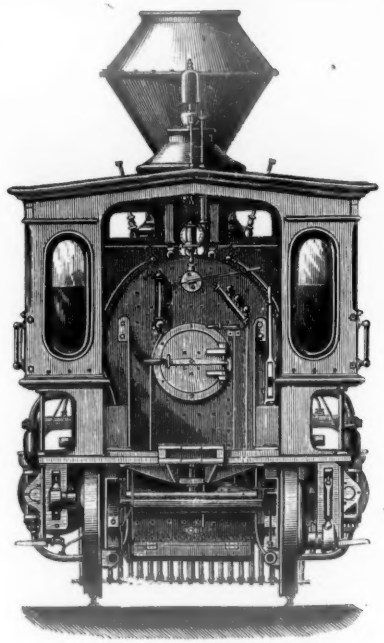
With regard to the company's purchase of coal lands, they report that the interruptions of business by strikes and the fluctuations in the coal trade directed their attention "to the necessity of exercising some control over the production of coal." The history of the undertaking is given as follows:

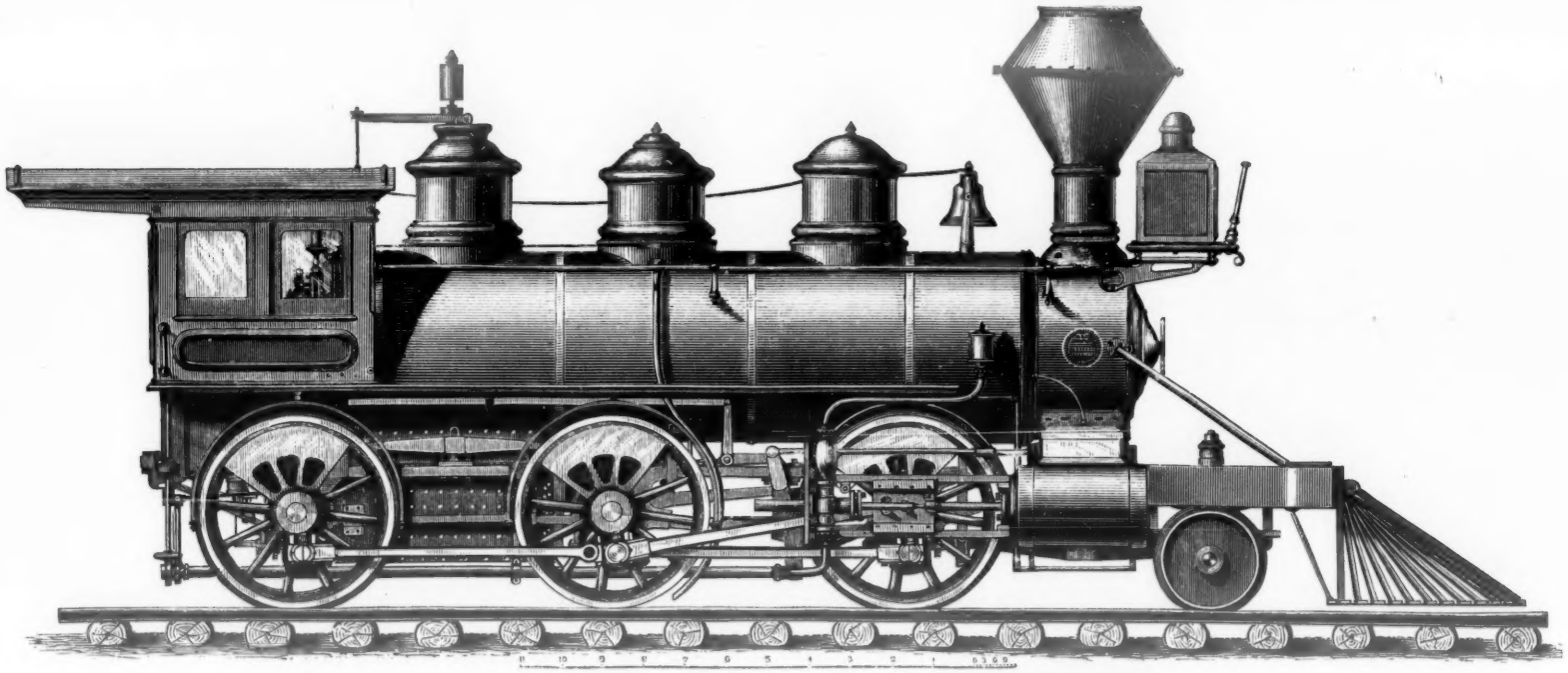
It was believed that the best way of accomplishing this result without injuriously affecting individual interests was for the company to become the owners of coal lands situate upon the line of its several branches.

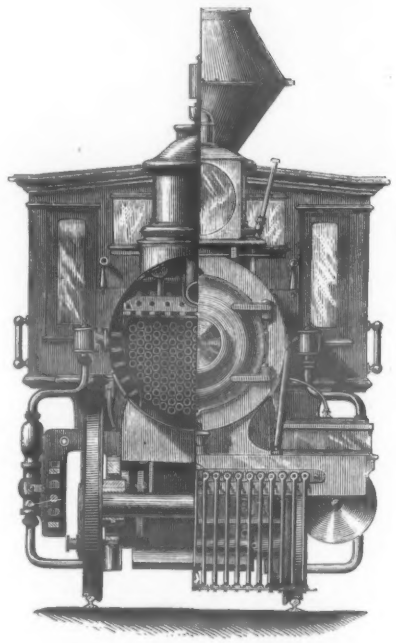
In order to provide the means to make these purchases, a loan of twenty-five millions of dollars was authorized, and secured by a mortgage dated the first day of June last, executed to the Fidelity Trust and Safe Company of Philadelphia, a copy of which mortgage is annexed to this report. Of the loan thus authorized, $6,000,000 of bonds will be retained to retire the previous mortgage bonds of the company, amounting in the aggregate to $5,801,200, and of the balance $11,962,000 have already been issued for the purchase of coal lands. Up to this time about seventy thousand acres of the best anthracite coal lands in Pennsylvania have been acquired and will be held by an auxiliary company, known as the Philadelphia & Reading Coal & Iron Company, of which the Philadelphia & Reading Railroad Company is the only stockholder.

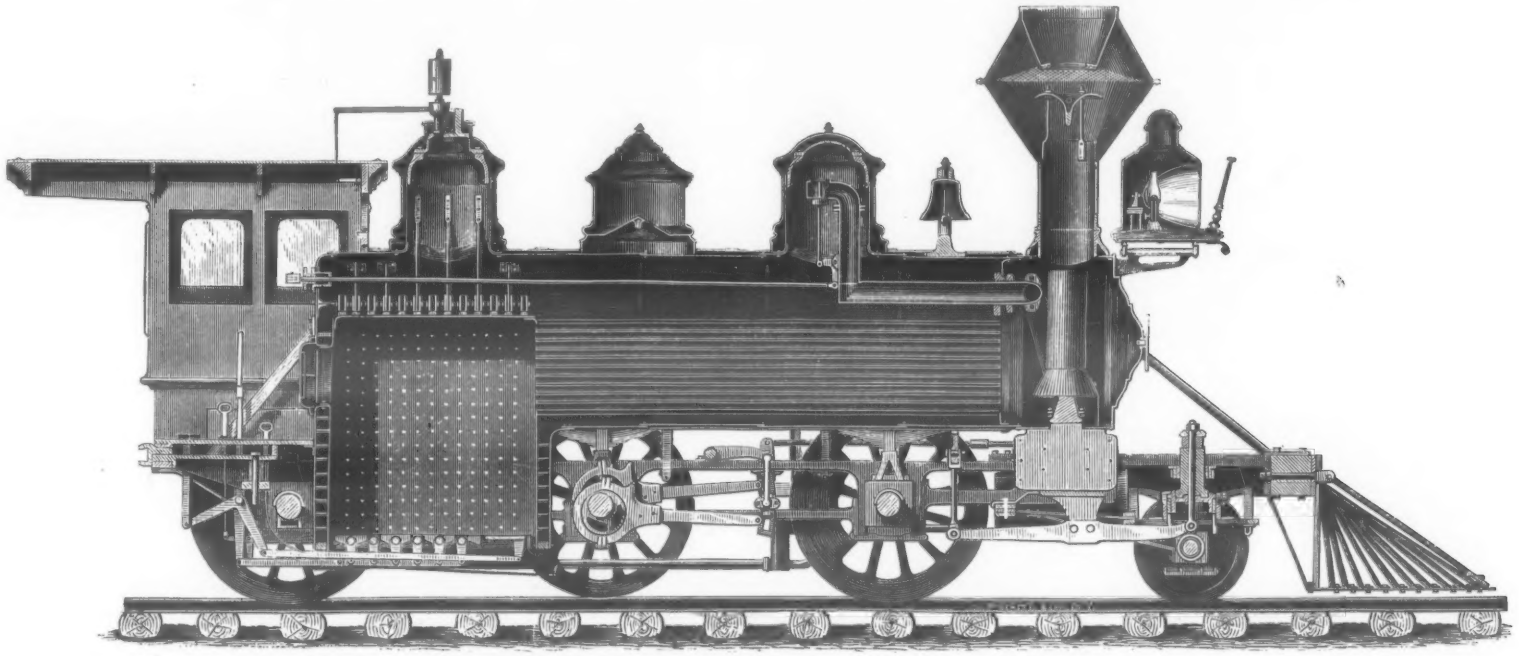
The result of this action has been to secure and attach to the company's railroad a body of coal land capable of supplying all the coal tonnage that can possibly be transported over the road for centuries. This result has been obtained without

UNIV. OF MICH.









MOGUL FREIGHT LOCOMOTIVE,

BUILT BY THE BALDWIN LOCOMOTIVE WORKS, PHILADELPHIA.

M. BAIRD & CO., PROPRIETORS.

imposing any serious financial burden upon the company, for the lands purchased are already so far developed that it is estimated they will produce in rents during the year 1872 $1,200,000, and it is believed that in less than three years the net annual revenue arising from the lands will be greater than the interest payable upon the loan issued to secure them.

The entire coal tonnage of the year has been 6,002,573.03 tons. During one week in the month of June 187,767.17 tons of coal were transported, and the average weekly coal tonnage for the four weeks ending July 1 was 179,360.07 tons.

The increase of the passenger and merchandise business has kept pace with the increase of the coal traffic, and the aggregate railroad receipts of the company from other sources than coal have been $4,275,550, against $3,072,496 for the previous year, showing an increase of $1,203,054; of which amount, however, $708,408.62 is due to the business upon the Philadelphia, Germantown & Norristown Railroad, which was not worked by the company in 1870.

During the year the extension of the Lorberry Creek Branch and the Pickering Valley Railroad have been completed. The Perkiomen Railroad has been extended to Green Lane, and numerous branches and laterals to new collieries have been constructed in the coal region. The number of miles of railroads now controlled and worked by the company, when reduced to single track, is 1,266.3. For further details of the working of these lines, the stockholders are referred to the accompanying reports of the General Superintendent and Chief Engineer:

The gross receipts of the six steam collieries during the year were	$264,855 16
And the total expenses, including $13,912.15 carried to credit of insurance fund, was	230,135 53
Leaving a net profit of	$34,719 63

The business of the Schuylkill Canal, including the transportation line, shows a loss for the year of $15,446.25, after charging to expenses $41,881.90 for sinking fund of the Schuylkill Navigation Company improvement bonds. The result of the year's business upon the canal has been much more satisfactory than was anticipated, and henceforth it is believed that the lease of the works of the Schuylkill Navigation will be a source of revenue to the company. The boat stock has been much improved and enlarged, and it is believed to be in better condition now than it has been for several years. The coal tonnage of the canal for the season was 1,010,170.17 tons, and it will be fully equipped for a business of 1,400,000 tons next year.

The business of the Philadelphia, Germantown & Norristown Railroad during the year has been very satisfactory, the net earnings of the line having been more than enough to pay the rent and all expenses, so that during the first year of the term the lease has been a source of profit to the company.

Upon the 25th of March last the Mahanoy & Shamokin Railroad Company was merged into the Philadelphia & Reading Railroad Company, and upon the 8th of May last the Northern Liberties & Penn Township Railroad Company and the Lebanon & Tremont Railroad Company, the latter previously formed by the merger of the Pine Grove & Lebanon, Lorberry Creek & Good Spring Railroad companies, were also consolidated with the Philadelphia & Reading Railroad Company.

Since the close of the year's business the managers have authorized the lease of the Susquehanna Canal, extending from Columbia to the tidewater of the Chesapeake Bay, and forming, with the Reading & Columbia Railroad, an outlet for the coals of the western part of the Schuylkill Coal Field, and upon the first of the present month a formal lease and contract was entered into by which the possession of the canal passed to this company, at an annual rent equal to the interest upon the debt of the canal company, and one-half of the net profits of operating the canal after deducting rents and the cost of all improvements, provided that after the year 1880 the rent to be paid in addition to the amount of interest shall not be less than a sum equal to three per cent. upon the present capital of the canal company. The possession of these works seemed to be necessary to the proper development of the western coal fields, and it is believed that with the increased coal tonnage of the Reading & Columbia Railroad, and the great addition to the traffic which must result from the enlargement of the Pennsylvania canals, the business of the canal will soon become large enough to reimburse the company for the annual outlay.

This report was made at the annual meeting, January 8, at which resolutions were passed adopting and approving the report, and ratifying the lease and contract with the Susquehanna Canal Company, and the mortgage for $25,000,000, for means to buy coal lands, and authorizing the managers to carry out any of the measures mentioned in the report, and thanking them for their ability in conducting the company's business.

"MOGUL" FREIGHT LOCOMOTIVE.

We give our readers in this number of the GAZETTE an engraving of a locomotive built by the Baldwin Locomotive Works of Philadelphia. This plan of engine has been steadily growing in favor with railroad managers, and we have recently learned of a number of orders which have been given for them for heavy freight traffic on roads where heretofore the only locomotives used were of the ordinary American plan with four driving wheels and a truck.

The illustrations are sufficiently clear to explain the construction of the engines without any description, and the builders' specifications herewith give the principal dimensions:

SPECIFICATION

of an eight-wheeled "mogul" freight locomotive engine, having six coupled wheels and a swing-bolster pony truck.

GENERAL DESCRIPTION.

Cylinders, 17 inches diameter and 24 inches stroke. Drivers, 54½ inches diameter. Gauge, 4 feet 9 inches. Fuel, soft coal or wood. Weight of engine in working order with fuel and water, about 70,000 pounds; 60,000 pounds on drivers. Total wheel-base, 21 feet 10 inches. Rigid wheel-base, 14 feet 6 inches.

BOILER

of the best Pennsylvania cold-blast charcoal iron, ⅜ inch thick; all horizontal seams and junction of waist and fire-box double-riveted. Boiler to be well and thoroughly stayed in all its parts, provided with cleaning holes, etc.

Waist 50 inches in diameter at smoke-box end; made straight and with two domes.

Flues of iron, with copper ferules on fire-box end, 156 in number, 2 in. in diameter and 11ft. 3in. in length.

Fire-box 60 inches long and 34½ inches wide inside; of best homogeneous cast steel; side, crown and back sheets five-sixteenths inch thick: flue sheet one-half inch thick. Water space three inches sides and back, four inches front. Stay bolts seven-eighths inch diameter, screwed and riveted to sheets, and not over four and one-half inches from center to center. Crown bars made of two pieces of iron four and one-half inches by five-eighths inch, bearing on side sheets, placed not over four and one half inches from center to center, and secured by bolts screwed through crown, with nut on, and riveted over.

Grates, cast iron, ash-pan, with double dampers.

Smoke-stack, diamond pattern.

CYLINDERS

placed horizontally; each cylinder cast in one piece with half saddle; right and left-hand cylinders reversible and interchangeable; accurately planed, fitted and bolted together in the most approved manner.

PISTONS

fitted with two brass rings, babbited.

GUIDES

of iron, case-hardened, fitted to guide-yoke, extending across.

VALVE MOTION.

Most approved, shifting-link motion, graduated to cut off equally at all points of the stroke. Links made of the best hammered iron, well case-hardened. Sliding-block 4½ inches long, with flanges 7 inches long. Rock shafts of wrought iron, with journals 3½ inches diameter and 12 inches long. Reverse shaft made with arms forged on.

DRIVING WHEELS,

six in number, 54½ inches in diameter. Centers of cast iron, with hollow spokes and rims, and turned to 49½ inches diameter to receive tires.

Tires of cast steel, front and back pair flanged, 5½ inches wide and 2⅝ inches thick when finished. Main pair plain, 6 inches wide and 2⅝ inches thick.

Axles of hammered iron; journals 7 inches diameter and 8 inches long.

Wrist-pins of cast steel. Springs of best quality of cast steel.

Connecting-rods of best hammered iron, furnished with all necessary straps, keys and brasses, well fitted and finished. Equalizing beams of most approved arrangement, with steel bearings.

FRAMES

of hammered iron. Pedestals and braces bolted. Pedestals cased with cast-iron gibs and wedges to prevent wear by boxes, and keyed to place.

FEED WATER

supplied by one injector and two pumps, with valves and cages of best hard metal accurately fitted. Plunger of iron. Cock in feed-pipe regulated from foot-board.

ENGINE TRUCK.

Frame, square wrought iron, with center-bearing swing-bolster and radius bar.

Wheels of approved pattern, 30 inches diameter.

Axles of best hammered iron, with inside journals 4½ inches diameter and 8 inches long.

Springs of cast steel, connected by equalizing beams.

HOUSE

of good pattern, substantially built of hard wood, well finished and fitted to place.

PILOT

of wood.

FURNITURE.

Engine to be furnished with sand-box, alarm and signal bells, whistle, two safety valves, steam and water gauges, heater and gauge cocks, oil-cans, etc., etc. Also a complete set of tools, consisting of two jack screws, pinch bar, monkey, packing and flat wrenches, hammer, chisels, etc.

FINISH.

Cylinders lagged with wood and neatly cased with brass heads of cast iron polished. Steam chests with cast iron tops; bodies cased with brass. Domes lagged with wood, with brass casing on bodies and cast-iron top and bottom rings. Boiler lagged with wood and neatly jacketed with Russia iron secured by brass bands polished.

GENERAL FEATURES OF CONSTRUCTION.

All principal parts of engine accurately fitted to gauges and thoroughly interchangeable. All movable bolts and nuts and all wearing surfaces made of steel or iron, case-hardened. All wearing brasses made of ingot copper and tin, alloyed in the proportion of seven parts of the former to one of the latter.

TENDER.

On 8 wheels, 30 inches diameter; axles of best hammered iron; outside journals, 3½ diameter and 5½ inches long; oil-tight boxes with brass bearing. Springs of cast steel equalized. Tank well put together with angle-iron corners and strongly braced. Top and bottom plates of No. 6 iron; side plates of No. 8 iron. Capacity, 2,000 gallons.

PAINTING.

Engine and tender to be handsomely painted and varnished.

Dr. B. J. Lamoth's Iron Freight Car.

The following report on an iron freight car designed by Dr. B. J. Lamoth was prepared at the request of the gentleman to whom it is addressed. The car referred to is constructed of steel rods and iron pipes, fastened together by peculiar cast or malleable iron attachments. The lower longitudinal frame is also made of pipes with similar connections to those used in the upper portion. The outside is covered with sheet iron and the inside lined with wood. The inventor has been advocating this plan with great perseverance for a number of years, and the report below was prepared in order to present a comparison of the advantages of this plan with those of ordinary cars:

MR. GEO. H. ELLERY: In comparing the iron car designed by Dr. B. J. Lamoth with those in ordinary use, the first and perhaps most important element to be considered is their relative carrying capacity in proportion to their weight. The capacity of a box freight car is determined by two things: first by its strength, and second by the space which it affords for loading freight.

Its strength will not admit of very accurate calculation, but is determined more by its capacity to bear the rough usage of daily traffic, and can only be satisfactorily determined by the results of experience and practice. The amount of space which it affords can, however, readily be calculated from a few dimensions of the body, and in the transportation of many kinds of freight the capacity of a car is governed by its size alone and not by its strength. The carrying capacity of those which are compared with each other below, therefore, has been determined by their cubical contents alone; and a load of 15 lbs. per cubic foot has been calculated for each car. In order to make a comparison which would at once represent the relative advantages of the different cars, I have calculated the gross load carried to each thousand pounds of paying freight, *i. e.*, for each 1,000 lbs. of freight carried in Dr. Lamoth's car, 718 lbs. weight of car must be hauled, or 1,718 lbs., counting the weight of the freight and its proportionate weight of car. The Northern Central cars carry 1,884 lbs., and those on the Harlem Railroad 1,926. It will be seen, therefore, that with the Northern Central cars 9½ per cent. more weight must be hauled in carrying 1,000 lbs. of paying freight than with Dr. Lamoth's car. The difference is still greater with the others given in the table.

It is of course true that all the cars referred to in the table are capable of carrying a greater load of heavy freight than that given, but in doing an ordinary miscellaneous freight traffic the carrying capacity of each will be governed to a very great extent by the space afforded for loading freight, and for this reason the number of cubic feet of space in each car has been taken as the basis for our estimates.

It will be observed that the trucks of the iron car weighed 12,000, instead of about 9,000, which is the weight of the others. The reason of this is that the former were heavy passenger-car trucks, and therefore in calculating the amount of gross load carried to each thousand pounds of paying freight, 3,000 lbs. has been deducted from the weight of the iron cars, as ordinary freight-car trucks could be used as well under the iron car as under the others.

	Dr. Lamoth's car.	North. Central Railroad.	Harlem Railroad.	Baltimore & Ohio.	Chicago, Bur. Hington & Quincy.	Illinois Central.
Proportion of weight carried to 1,000 lbs. paying load as compared with Dr. Lamoth's car		9½ p. c. more	12 p. c. more	14½ p. c. more	15 p. c. more	19 p. c. more
Total number of lbs. hauled to carry 1,000 lbs. paying load	*1,718	1,884	1,926	1,966	1,979	2,054
Weight of car body	6,906	.....	9,614	10,600	.....	10,000
Weight of car trucks	12,000	.....	8,386	8,800	.....	9,000
Weight of car	18,906	17,350	18,000	19,400	19,500	19,000
Capacity in lbs	22,230	19,690	19,425	20,070	19,915	18,120
Capacity in cubic feet	1,482	1,308	1,295	1,338	1,327	1,208
Size of car body inside	28'6"×8'×6'8"	27'10"×7'10"×6'	28'×6'9"×7'6"	29'1"×7'8"×6'	27'6"×7'7"×6'5"	28'6"×7'7"×6'

* In making this calculation, 3,000 lbs. has been deducted from the weight of the trucks and car.

With reference to the other questions involved in the construction of cars on this plan, it is impossible for me to speak with any definiteness. Their durability and strength can, of course, only be determined by use and experience, and their cost will depend upon the efficiency of special tools and machinery which the inventor informs me he has planned. It is, therefore, impossible to form any very definite opinions or reach any conclusions which would have any value until the appliances proposed for manufacturing are perfected.

M. N. FORNEY.

Identifying Dead Heads.

It is stated that the Pennsylvania Railroad Company is about to adopt a novel device to prevent the use of their free passes by more than one person. It is proposed to place a photograph of the real holder upon the back of the ticket, by which the conductor can instantly determine whether the person presenting it is lawfully entitled to its use or not. It is not generally known how commonly the holders of season passes permit others to use them. It is especially a delinquency of journalists, who will often lend a reporter or correspondent a pass simply to save the trouble of asking for a trip pass, and, we fear, are not always above lending a pass to a friend.

Asbestos Steam Packing.

Asbestos is proposed for piston-rod packing. It is said that friction has no appreciable effect on the asbestos packing, and however great the pressure of the steam, or howsoever high the temperature may be, this packing seems to be unaffected.

General Railroad News.

PERSONAL.

—By a recent accident on the Toledo, Peoria & Warsaw Railway, Mr. W. H. Cruger, the Vice-President of the company, had his hip broken and his skull fractured, but by the last news was thought to be out of danger.

—On the 7th inst. Samuel Sloan and Moses Taylor (both directors of the Delaware, Lackawanna & Western Company) were chosen directors of the Rome, Watertown & Ogdensburgh Railroad Company, to fill vacancies.

—James Imbrie Miller, the eldest son of the eminent engineer, the late Edward Miller, of Philadelphia, who went to India in 1869, in the service of the government of that country, to introduce some of the peculiarities of American railroad, supposed to be especially adapted to that country, has been appointed, according to the *Gazette of India*, Chief Engineer of the State Railways of Central India, with the brevet rank (so our authority says) of Lieutenant Colonel of Royal Engineers of twenty-eight years' service.

—Edward Miller, of Philadelphia, one of the most experienced and ablest of American railroad engineers, died early this month. One of his earliest experiences was while still a youth on the Western Division of the Pennsylvania Canal, including the Portage Railroad, in 1830. He became Chief Engineer of the Catawissa Railroad and the Morris & Essex Canal in 1836, of the Sunbury & Erie (now Philadelphia & Erie) road in 1839, of the New York & Erie (now Erie) in 1840, of the Schuylkill Navigation Company in 1845, of the Pennsylvania Railroad in 1850, of the North Pennsylvania Railroad in 1852, and of the Pacific Railroad of Missouri in 1856. He was also President of the Harrisburg & Lancaster Railroad Company in 1843, and of the North Pennsylvania in 1852. As contractor he constructed the entire line of the Philadelphia & Erie road and also the Warren & Franklin road.

ELECTIONS AND APPOINTMENTS.

—The stockholders of the Providence & Worcester Railroad Company elected the following board of directors for the coming year: Earl P. Mason, William S. Slater, John Carter Brown, Estus Lamb, George A. Leete and John R. Balch, of Providence, R. I.; Isaac Davis, Henry Chapin and Elijah B. Stoddard, of Worcester, Mass.; Eben B. Phillips, of Boston; Paul Whitin and John C. Whitin, of Northbridge, Mass.; John S. Needham, of Blackstone, Mass.; Lyman A. Cook, of Woonsocket, R. I.; and Gideon D. Spencer, of Pawtucket, R. I.

—The stockholders of the Little Miami Railroad Company have re-elected the following named gentlemen directors for 1872: Messrs. J. C. Butler, C. P. Cassilly, W. H. Clement, Edmund Dexter, Henry Hanna, L. B. Harrison, H. J. Jewett, Richard Lewis, J. H. Rogers, H. E. Spencer, A. Hivling and J. R. Swan.

—F. K. McFayden, who was conductor of the first construction train of the Chicago & Michigan Lake Shore Railroad, has been appointed Assistant Superintendent.

—At the annual meeting of the Pittsburgh, Cincinnati & St. Louis Railway Company, held in Steubenville, O., February 5, Thomas A. Scott, George B. Roberts, Josiah Bacon, Samuel T. Canby, Henry H. Houston, William Thaw, Thomas L. Jewett, Joseph Means, Thos. Means, Geo. W. Adams, D. S. Gray, J. N. McCullough and Robt. Sherrard, Jr., were appointed directors. In this board, Thomas A. Scott, Henry H. Houston, William Thaw and J. N. McCullough take the places to which H. J. Jewett, C. Dewey, James K. Johnson and Wistar Morris were elected the year before. Most, if not all, of the changes, however, were made during the year.

—The directors of the Lafayette, Bloomington & Mississippi Railway Company on the 31st ult. elected the following officers: President, John N. Drummond, of Toledo (Assistant President of the Toledo, Wabash & Western); Vice-President, A. Anderson, of Toledo (also Vice-President of the Toledo, Wabash & Western); Secretary and Treasurer, William B. Corneau, of Toledo, who holds the same position in the Wabash Company.

—The annual meeting of the Massillon & Cleveland Railroad Company has been held at Massillon, Ohio, and an election had for a Board of Directors for the ensuing year, which resulted in the choice of the following named persons: G. W. Cass, J. N. McCullough, Thos. D. Messler and W. M. Stewart, Pittsburgh; Kent Jervis and John G. Warwick, Massillon; and D. P. Rhodes, of Cleveland. The Board subsequently organized by the election of Thomas D. Messler as President, and F. M. Hutchinson as Secretary and Treasurer. This company's road is a branch of the Cleveland, Mount Vernon & Delaware road 13 miles long, from Massillon to Clinton, O.

TRAFFIC AND EARNINGS.

—There has been such an extraordinary pressure of freight on the railroads south of Nashville that they have been blocked, and after borrowing all the cars possible from connecting lines have been compelled to refuse freight. The chief cause of this is the closing of the Mississippi River above Cairo and its difficult navigation below, which has turned a large amount of freight which hitherto has gone by river to the railroads. The latter, moreover, are but lightly supplied with rolling stock, their ordinary traffic not requiring a heavy equipment, and a further misfortune is that the difference in gauge makes it impossible to borrow cars from the roads north of the Ohio, some of which doubtless could spare a great many. The Louisville & Nashville, which is well equipped, has loaned not only cars but locomotives to aid its southern connections.

—It is proposed to put a weekly line of steamers on the lakes this season to run from Sarnia to Fort William, on the north shore of Lake Superior, connecting with the Great Western and the Grand Trunk roads. It is not easy to see where such a line would get traffic, there being very little at Fort William, and, on the Canada shore, very little on the way.

—The traffic receipts of the Grand Trunk of Canada for the week ending January 20 amounted to £35,800, against £31,700 in the corresponding week of last year, showing an increase of £4,100, or 13 per cent.

—The traffic receipts of the Great Western of Canada for the week ending January 19 amounted to £19,220, against £16,991 in the corresponding week of last year, showing an increase of £2,229, or 13 per cent.

—The following is a statement of the number of freight cars which crossed the Clinton Bridge of the Chicago & Northwestern Railway during the year 1871:

Loaded, going		East	28,801
"	"	West	17,432
Empty	"	East	4,895
"	"	West	15,587
Total	"	East	33,096
"	"	West	33,019
"	"	East and West	66,715

In the same period nine or ten thousand cars attached to passenger trains crossed the bridge.

—The Toledo *Blade* says: "E. B. Ward, of Detroit, has contracted for the construction of six barges to be built at New Jerusalem, about twelve miles northeast from Toledo. They are designed for lumber transportation between Ludington, Mich., and Chicago, and to be run with the new iron steamer now being built at Wyandotte, Mich. They are to have a carrying capacity of 150,000 feet each, and the whole will cost 72,000. It is known to many of our readers that, some ten or twelve years since, Mr. Ward purchased some 30,000 acres of heavily-timbered lands in Ottawa County, for the sake of the timber, and that he built a large saw-mill on the tract. He has commenced the construction of a canal from the lake into his lands, which is now a mile and a half long."

OLD AND NEW ROADS.

Houghton & Ontonagon.

A correspondent of the Portage Lake *Mining Gazette*, writing from L'Anse, January 29, says that this road is to be completed to the Champion Furnace, at the west end of Lake Michigammi, by August 1: "About six miles of track is now laid and in working order from this point eastward. The contractors, D. L. Wells & Co., have at present a force of 700 men employed on the works, and are pushing things vigorously from each end of the line with cheerful success. Many of the 'cuts' and 'fills' for the first ten miles eastward are simply enormous—some of them showing from thirty to sixty thousand yards of excavating and filling—yet they are displaying a systematic courage and earnestness equal to the emergency of their task. They are now engaged in blasting through two solid rock 'cuts,' averaging 200 feet in length by about 20 in depth."

Work is progressing on a branch two miles long to connect a mine with this road at a point five miles southeast to L'Anse, and this is to be completed by June. The road is expected to have a heavy traffic of iron ore.

Missouri & Arkansas Narrow-Gauge.

Articles of association of this railroad company have been filed in the office of the Secretary of State. The proposed road is to start from some convenient point in township 29, range 3 east, in Wayne County, and run in a southwesterly direction in and through Reynolds and Carter counties to some suitable point in township 27, north of range 1 west, a distance of thirty miles. This describes a line from a point on the Iron Mountain road about 20 miles south of Pilot Knob southwest to or near Doniphan. The capital stock is set down at $40,000 and the directors are Robert L. Lindsay, John F. T. Edwards, Joseph F. Linsay, of Ironton, Mo.; Orlandoson Hise, of St. Louis, and Henry Cushing, of Indianapolis.

Fort Scott & Allen County.

The Fort Scott *Monitor* of the 3d says: "What is known as the Fort Scott & Humboldt road is nearly graded. It will only take three weeks to finish the road bed. The contractor has until the first of July to do his work. Col. Shepherd is getting ready to lay the iron. The road will be running before the summer is over."

Covington & Chicago.

This company filed articles of incorporation in Indiana February 5. The capital stock is $300,000. The road is to commence at Covington, Fountain County, and run in the most eligible route to the State line of Illinois in the direction of Rossville, Hoopestown, or Milford, Ill. The length of the road will be twenty-five miles. The intention is, probably, to make it a branch of the Chicago, Danville & Vincennes, with which connection can be made at either of the places named, which are respectively 110, 104 and 93 miles south of Chicago.

Indianapolis Coal Road.

Indianapolis is urging the construction of a new railroad to the Brazil coal field, to be used only for the transportation of coal. There are now two lines to the heart of the field, neither of which, so far as we have learned, has been so burdened with traffic as to require a second track.

New York Western Midland.

Under this name a company has been organized to construct a railroad from Hancock, Delaware County, connecting with the Erie and the New York & Oswego Midland Railroad, through Deposit, Nineveh, Cincinnatus, Cortland, Homer, Skaneateles and the central counties, to connect with the Lake Ontario Shore Railroad. Such a line would be for the most part parallel with the New York & Oswego Midland and from 16 to 40 miles west of it. It would give the Ontario Shore road a New York outlet somewhat shorter than the Midland, but would be, for most of its length, too near the Syracuse & Binghamton line to have a considerable local traffic.

Sandusky Street Railroad.

This company filed its certificate of incorporation February 3 at the Ohio Secretary of State's office. The capital stock necessary for the construction of the road is $40,000. The corporators are Watson Hubbar, Philander Gregg, Christopher C. Kuch, Henry J. Dunaker, William F. West and F. W. Alvord.

Northern Pacific.

One of the engineers engaged on the Dakota Division writes to us from Fargo under date of January 20 as follows:

"Although the track reached Red River something like a month ago, no train has been run through up to this time, and from the present outlook it will be a fortnight longer before the road will be clear of snow and in a condition to run on. This is not owing to any extraordinary fall of snow, but to the fact that the track was not protected by snow-fencing. A large force is at work building fence and clearing track, but shoveling seems of little account, except where the track is protected. The coldest weather we have had this season was in the month of November, and then the mercury stood 33 degrees below zero. Since that time it has been no lower than 24, and we have very seldom seen it *above* zero. Notwithstanding this weather, which would seem severe elsewhere, Messrs. Payson, Canda & Co. are working a large force between here and Sheyenne, and engineering parties are in the field locating the line beyond. They find no particular discomfort in living in tents. At the crossing of Red River are two flourishing towns, Morehead on the Minnesota side and Fargo in Dakota. It is confidently expected that the road will reach the Missouri River by the middle of August next."

Wyandotte, Kansas City & Northwestern.

This company, recently incorporated, proposes to construct a narrow-gauge railroad from Kansas City northwestward through Leavenworth to Lincoln, Neb. Such a line would be almost alongside of railroads already built nearly all the way, and consequently is not at all needed, unless it be to demonstrate the vast advantages of the narrow gauge. Probably, however, stock in the broad-gauge roads will not fall very fast just yet.

Ballston & Ogdensburgh.

Articles of association have been filed with the Secretary of State of New York for the formation of a company to construct and operate a railway from Ballston to Ogdensburgh, the route being northwest from Ballston, through Milton, Galway and Providence, to the line of Fulton County; thence through the towns of Long Lake, Arritta, Lake Pleasant, Wells, Hope and Benson; thence through Wilmot, Herkimer County, and the towns of Colton, Fine, Clifton, Russell, Hermon, DeKalb, Canton, Oswegatchie, to Ogdensburgh, the entire length of the road being 150 miles. Capital stock, $6,000,000.

Mobile & Montgomery.

This company has been for more than a year engaged in constructing some very important bridges and trestle work from its present terminus at Blakely across the Tensas and Mobile rivers, and the swampy ground and numerous bayous intervening, which have hitherto separated it from Mobile. The work is now nearly completed. Trains have crossed the Tensas Bridge, 2,060 feet long, and the Mobile Bridge, 960 feet long, lacks only the draw span. Between the two there is a single stretch of 1¼ miles of trestles, and west of the river there are half a mile of trestle work and five small wooden Howe truss drawbridges. The entire length of the extension is 15 miles.

Meanwhile the track of the old road has been greatly improved and several of the old bridges renewed.

Southern Railway Security Company.

Whenever Mr. Thomas A. Scott visits a part of the country away from his own railroad lines (if such a place can be found), there is immediately a "report" that he has leased or bought or agreed to lease or buy whatever railroads there may happen to be in that territory, or to build two or three new ones. After his visit to Mobile, it was reported that the Southern Railway Security Company would lease the Selma, Rome & Dalton, the Alabama Central and the Selma & Mobile, all of which may be true for aught we know.

The following persons who accompanied Colonel Scott on this trip, after the completion of the lease of the Memphis & Charleston road, are named as the Executive Committee of the Company: Col. H. S. McComb, of Delaware; Alfred Gaither, of Cincinnati; W. T. Walters and B. F. Newcomer, of Baltimore; H. B. Plant, New York; T. S. Scott, Richard A. Peters and C. F. Krombaack, of Philadelphia, and M. J. O'Brien, of Georgia.

Mobile & Ohio.

This company is completing a large and fine passenger depot in Mobile which, it is said, will be one of the best in the South.

South & North Alabama.

Work has been commenced on a branch of this railroad to Prattville, which is about eight miles west of the point where the road crosses the Coosa, a few miles north of Montgomery.

Springfield & Farmington Valley.

For this new railroad three routes have been surveyed between Tariffville and Suffield, Conn. From Suffield there is one line to the Boston & Albany road at West Springfield, passing west of the village of Agawam. The distance from Tariffville to the State line by the three routes is 11.56, 11.75 and 11.86 miles respectively. The longest route has a grade of 68 feet per mile, both the others 53 feet. The estimated cost is $285,000, $255,300 and $310,000 respectively. From the State line to Springfield the distance is 5.53 miles, and the estimated cost $140,000.

Nashville & Northwestern.

The Nashville & Chattanooga Company, which leases the above road, has, it is reported, secured means for the construction of a branch from Huntington, 107 miles due west of Nashville, southwest about 45 miles to Jackson, Tenn., where it will connect with the Mobile & Ohio and Mississippi Central roads, and complete short routes from New Orleans and Mobile to Nashville, and a favorable one from Memphis.

Springfield & Illinois Southeastern.

The President says that the gap from Altamont to Pana, between the northern and southern sections of this road, will be filled about the 1st of March. The company will then have an unbroken line from Beardstown, on the Illinois River, southeast to Shawneetown, on the Ohio, a distance of 225 miles.

East Alabama & Cincinnati.

The Mobile *Register* is "reliably informed" that track has been laid on the upper end of this road from Gadsden southeastward five miles, and that the road-bed is ready for the iron for five miles further. Six miles, from Gadsden to a connection with the Alabama & Chattanooga at Atalla has been in operation for some time, as well as 22 miles on the lower end, from Opelika northward.

Old Colony & Newport.

The Boston *Advertiser* says: "The managers of the Old Colony & Newport Railroad, with the idea of trying to obviate the many embarrassments resulting from the fact that their connecting roads and branches are under separate management, have for some time past been considering the policy of a consolidation which should bring into one organization their own road, the South Shore, Duxbury & Cohasset, Milton Branch, Granite Branch and Cape Cod Railroad companies, each of which now has a separate organization, and each must be consulted on all questions of tariff or running of trains. With the exception of the Cape Cod Railroad, which, under its present management, has met the requirements of its patrons, the Old Colony and Newport Company has probably a sufficient interest to give it a controlling voice in its connecting branches in such questions as arise, and there will probably be little difficulty in arranging satisfactory terms with them. But the Cape Cod road being in a different position, a careful consideration of all the interests involved is doubtless found necessary, which of course requires time. If, on consultation between the officers of the two roads, which is now going on, it shall appear to be for the interest of the stockholders and the advantage of the public to consolidate, all minor obstacles will probably be overcome and a basis agreed upon which will be mutually satisfactory."

Grand Trunk.

English journals of the 27th ult. have an advertisement offering an issue of £229,500 of 6 per cent. equipment bonds of this company at par. This issue is a balance o £500,000 authorized by the Canadian Legislature in 1867. They have yet 47 years to run.

Decatur & State Line.

Considerable grading was done on this line last summer and fall, but all came to a full stop with the Chicago fire. Now it is intended to resume construction in the spring and complete the road this season. The contractors for the grading of the north end of the line have brought suit against the chief contractors, Snell, Taylor & Co. The dispute is as to the measurement of the work done, the figures of the two firms being very far apart.

Cape Cod Railroad.

The directors have voted to take measures for the consolidation of that road with the Old Colony Railroad, and have called a special meeting of the stockholders to ratify their action.

Springfield & Northwestern.

The directors of this company have granted an extension of time to the contractors, and they are not now required to complete the section from Petersburg to Springfield until next January.

St. Paul & Chicago.

Announcement is made that this railroad has been transferred (whether by sale or by lease is not reported) to the Milwaukee & St. Paul. Proposals are asked for the construction of an extension of the road from Winona south to La Crescent (opposite La Crosse, Wis.), where connection will be made with the Milwaukee & St. Paul road. The line is to be completed by the 15th of August.

International Railroad.

Under date of February 1, H. M. Hoxie, the General Superintendent, issued the following announcement:

"On Monday, February 5, 1872, the International Railroad will be open for business to Keechi, 65 miles east of Hearne, and only 28 miles from Palestine.

"The station building has been erected in advance of the track, the telegraph line is in operation, and responsible forwarding and commission houses are now being established.

"Trains carrying the United States mail will run daily, Sundays excepted, connecting at Hearne with Houston & Texas Central Railway for Austin, Corsicana, Houston & Galveston; and at Keechi with Johnson & Mitchell's stages for Palestine and all points in Northeastern Texas."

Mr. Hoxie informs us that the company has men at work on every mile of the first 150 miles of the road, and will soon let the work to the eastern line of Texas.

New Orleans to Texas.

A recent issue of the New Orleans *Picayune* has the following account of the lines in Southern Louisiana:

"As active railroad movements are about to commence in Southwest Louisiana, the public will be anxious to know something about distances, connections and general facts in relation to these roads and the country through which they will pass.

"The railroad which is to be built in twelve months, extending from Berwick's Bay to the Sabine River, the boundary between Texas and Louisiana, is a part of the New Orleans, Mobile & Texas Railroad (formerly the Chattanooga) and a part of the original New Orleans, Opelousas & Great Western Railroad. That part extending from Berwick's Bay, opposite Brashear City, to Vermillionville, is part of the Opelousas Railroad. That part extending from Vermillionville to the Sabine is part of the New Orleans, Mobile & Texas Railroad.

"When this road is completed to the Sabine, about one hundred miles west of Vermillionville, the connection with Houston will be rapidly made. The distance is about one hundred and eight miles, and the old railroad is now in running order from Houston nearly to the Sabine.

"The railroad from Donaldsonville west is graded about twenty miles, but not ironed. From Donaldsonville to New Orleans the distance is 60 miles; road in running order.

"From the present western terminus of this railroad on the Atchafalaya to Vermillionville the distance is about forty-five miles. No work has been done on this road west of the Atchafalaya.

"From Vermillionville to Opelousas the distance is about twenty-two miles, road graded. This is part of the old Opelousas Railroad.

"Distance from Opelousas to Alexandria is about seventy miles; 18 miles of the road, near Alexandria, graded. From Alexandria to Shreveport the distance is about one hundred and twenty miles."

Boston & Portland Transit Company.

A bill has been reported in the Massachusetts Legislature to incorporate the "Boston & Portland Transit Company," uniting the Eastern and Boston & Maine railroads, with a capital stock of $21,000,000, which is not to be sold for less than $100 per share. The corporators are the present directors of both roads.

Utah Southern.

This railroad is now completed from Salt Lake City southward 17 miles.

Connecticut Western.

A branch from Collinsville southeast to New Britain is talked of, and it is promised that $200,000 from New Britain and Farmington will secure it by July next.

Lake Ontario Shore.

The Oswego *Times* says:

"There is a good prospect of trains being in regular motion the coming fall. Large quantities of rails from the rolling-mills at Rome are constantly arriving at Oswego and are being distributed along the line westward. There are nearly enough ties distributed along the route of the road to Webster, 50 miles from Oswego. The lumber for the bridges is being dressed and delivered. The materials for the engine houses and other buildings will be ready for use as soon as the spring opens. Four locomotives are building in Boston and a considerable number of cars at Springfield. Parties of engineers were on Monday, 5th inst., to commence at the end of the grading in the town of Webster, to locate the road *via* Rochester. Two lines will be run, one by the way of the Sand Bar, on the Lake Shore, and one by the head of Irondequoit Bay."

Atlantic & Great Western.

On the 24th ult. this company put on the London market $3,800,000 of a security termed "leased-lines-rental trust bonds," bearing 7 per cent. interest, at 83. The bonds, the prospectus says, are intended to provide means for acquiring

"1. The Cleveland & Mahoning Railroad, and the Hubbard Branch, now under lease to the Atlantic & Great Western Railroad Company for a remaining term of about ninety years, ending October 7, 1962.

"2. The Niles & New Lisoon and the Liberty & Vienna railroads, now under agreement for lease to the Atlantic & Great Western Railroad for a like period."

The fixed rentals paid under the leases amount to $253,448 gold and $274,272 currency—or what is now the equivalent of $502,786 gold. The amount of this loan will be sufficient to cover the entire capital account of the two last-named lines and a majority of the stock of the former. The right is reserved to issue $1,700,000 more for a further purchase of Cleveland & Mahoning shares.

The securities purchased with the proceeds of this loan will be held under a trust deed as a special security for the bondholders. It is said that the rentals will pay the interest on this loan and provide a sinking fund which at the end of thirty years will redeem them, and so leave the leased lines the property of the Atlantic & Great Western free from debt.

All the lines described belong properly to the Cleveland & Mahoning, and altogether they are about 125 miles long.

Harrisburg & Potomac.

Ten miles of this line has been graded and work progresses. The people of Petersburg have subscribed $50,000 to secure a branch.

Berks County Railroad.

Work is to be commenced immediately between Birdsboro and Reading, and the contracts for the remainder of the line are to be let April 1.

Columbia & Port Deposit.

It is reported that the farmers on the line of this road are working at the grading.

Somerset Branch.

This road was constructed with the expectation of leasing it to the Pittsburgh & Connellsville Company, but the attempt to make a contract to that effect has failed, it is reported, and the new road will be operated independently.

Rondout & Oswego.

The New York *Tribune* of the 13th says:

"Notwithstanding the injunction recently granted by Judge Lawton, of Ulster County, and served upon the Directors of the Rondout & Oswego Railroad Company, on the petition of the Hon. Thomas Cornell and T. R. Westbrook, restraining the directors from leasing or selling the railroad of that company, they have leased the road to John A. Greene & Co. for a period of ten years. By the conditions of the lease the lessees are to have the road completed to Oneonta in two years, paying all the rights of way, and doing all that is necessary to put the road in good condition. They are also bound to pay the debts of the company to the amount of $700,000, exclusive of anything it now may owe them, and to meet the interest on the mortgage bonds. After two years the stockholders are to receive a dividend of three per cent.; for the next two, three and a half per cent.; the next two, five per cent.; and the remainder of the term, seven per cent. In consideration, Greene & Co. are to receive $1,560,000 of the bonds of the road, and $1,200,000 in stock, payable, 4,000 shares on signing the contract, 4,000 when the road is finished to Stamford, Delaware County, 4,000 when it reaches East Davenport, and the remainder upon the completion of the road to Oneonta. The lessees give a bond for $300,000 for the faithful performance of their contract. The Rondout & Oswego Railroad Company retain a controlling amount of stock. Considerable litigation will no doubt follow this action of the directors."

Boston & Providence.

This company has recently put its train men in uniform.

Cairo & Vincennes.

This company has been offering $3,500,000 of its first mortgage 7 per cent. bonds in London at 87½, gold. The "Pennsylvania Company" has agreed with this company to set apart 25 per cent. of its gross receipts from all traffic which it shall receive from or deliver to the Cairo & Vincennes road as a fund for the purchase of the latter company's bonds. John Wilhelm Drexel and Charles Edward Tracy, of New York, will act as trustees for the bondholders.

As the line is 157 miles long, this issue is at the rate of $22,300 per mile. Doubtless a short branch will be constructed to Paducah, which will give an outlet to a line thence to Memphis and New Orleans, with which the "Pennsylvania Company" has close relations. The value of Cairo & Fulton as a connection will depend chiefly on the St. Louis & Iron Mountain Company, which now controls that line.

Harrisburg & Havre de Grace.

An announcement was made about a fortnight ago that the Susquehanna & Tidewater Canal had passed (by lease) under the control of the Philadelphia & Reading Railroad Company. It is now reported, says the Wilmington (Del.) *Commercial*, that the company intend building a railroad from Harrisburg to Havre de Grace on the towpath of the canal.

Bennett's Branch Extension.

The Clarion (Pa.) Democrat says: "The contracts require the ties to be delivered on the Bennett's Branch Extension of the Allegheny Valley Railroad before the first of next June. It is intended to complete the track from the Junction at the mouth of Redbank, by the first of August, up to Long Point Tunnel, and a month or so later to New Bethlehem; and about the close of 1872 to finish the whole line through to Driftwood, on the Philadelphia & Erie Railroad."

Pittsburgh, Cincinnati & St. Louis.

At the annual meeting of this company in Steubenville, Ohio, on the 5th instant, additional preferred stock to the amount of $3,500,000 was authorized to be issued by the board, to be used in paying off or funding the floating debt of the company, and of the Steubenville & Indiana Railroad for the right of way. The leasing of the Chartiers Valley Railroad was unanimously authorized; and also the Jeffersonville, Madison & Indianapolis Railroad.

Atchison & Nebraska.

Mr. F. R. Firth, the Chief Engineer, advertises that the contract for grading the road-bed from Sterling to Lincoln, Neb., about 35 miles, will be let on the 29th inst. It must make such progress that track-laying may commence at Sterling on the 15th of April and progress continuously at the rate of two-thirds of a mile per day, and the road-bed must be completed to Lincoln by the 20th of June. The payments will be made one half in cash and one half in 10 per cent. bonds of Johnson and Lancaster counties, Neb.; but bids on a cash basis will also be received. The contractors will be required to guarantee the wages of laborers.

Canada Pacific.

A dispatch from Ottawa, Canada, says that the engineer in charge of the explorations for this route has examined a line between Sault Sainte Marie and French River and found a favorable line 250 miles long at no place more than 15 miles from the Georgian Bay. This would be a link in a line connecting the Northern Pacific with Montreal.

Whitby and Port Perry.

This Canadian company ran its first passenger car over its line on the 1st inst.

Northern Pacific.

In Congress on the 12th inst., on motion of General Banks, of Massachusetts, the House ordered the Committee on Pacific Railroads to send for persons and papers and investigate the actual condition of the affairs of the Northern Pacific Railroad. The New York *Tribune's* correspondent says:

"This has caused some excitement among the friends of the road in this city, who fear that it will have an injurious effect on the sale of its bonds. General Banks this evening, in answer to inquiries as to whether he had any information showing that the road was not properly managed, said that he had no charges to make, and knew of no facts reflecting upon the honesty and efficiency of the management. The company were sending out glowing advertisements to induce people to invest their funds in its bonds, and he thought that inasmuch as Congress, endowing the road with a land grant, had become in some sense its indorser and responsible for its successes

it was its duty to keep the people informed as to the financial soundness of the company and the manner in which the road is being built."

It may be that this is a movement of the "strikers," who want the company to "come down;" but it is quite as likely to be a shrewd scheme to advertise the company, as the right kind of a report from a congressional committee appointed ostensibly to expose faults or misrepresentations would be a great help in selling bonds.

North Shore of Canada.

The plan by which capital was to be secured for this road required the subscription of certain definite sums from the various counties and cities on the line. The terms were that each subsidy should be good *if* all the others should be voted. Most of the municipalities had voted the designated amounts, and among them Quebec a million, when the county of Champlain disgusted the projectors of the scheme by voting against a subsidy of $200,000, thus invalidating all previous subscriptions. The Catholic clergy, the Grand Trunk Railway Company and the Richelieu Canal Company are charged with procuring this adverse vote. Now, it appears, the company has decided that it can get along without Champlain's subscription if it can only get the rest without conditions, and Quebec has voted its million unconditionally.

Rome, Watertown & Ogdensburgh.

The New York office of this company will be removed to No. 52 Wall street, on the 1st of May.

The company advertises that it will pay par and accrued interest, less government tax on the same, for the bonds of the Potsdam & Watertown Railroad, guaranteed by this company, due December 1, 1872, on presentation at the Mercantile National Bank, New York, or at the company's office, Watertown, New York.

Railroad Earnings in January.

The following reports of earnings for January have been made, all showing an increase for 1872:

	1872. Earnings.	1871. Earnings.	Increase.	Percentage. Increase.
Central Pacific	$634,480	$536,498	$97,982	18¼
Chicago & Alton	374,316	353,235	19,081	5½
Cleve., Col., Cin. & Ind	327,538	270,149	57,339	21¼
Lake Shore & Mich. S.	1,276,150	1,074,066	202,084	20
Marietta & Cincinnati	152,577	130,883	21,694	16½
Michigan Central	501,862	418,755	83,107	20
Milwaukee & St. Paul	460,985	396,760	64,225	16¼
Pacific of Missouri	254,319	231,990	22,329	9⅝
St. Louis & Iron Mountain	173,707	126,218	47,489	3 ¾
St. Louis, Alton & T. H.	145,368	143,468	1,900	1½
Toledo, Wabash & Western	439,780	365,174	74,606	20½
Total	$4,739,082	$4,047,196	$691,886	....

The average increase is more than 17 per cent.

Hannibal & St. Joseph.

This company's officers announced at the New York Stock Exchange on the 13th that a new issue of 50,000 shares of stock had been made. There has been active speculation in the stock of late, and the new issue has a tendency to break the market and make money for those who have sold "short." The President of the Stock Exchange, however, declared that the new stock was not a good delivery. The officers of the company claim that an act of the Missouri Legislature, approved March 4, 1869, gives them the authority for making such an issue. The transfer office has been removed from Duncan, Sherman & Co.'s to the railroad company's general office, at No. 78 Broadway, and the Tenth National Bank has been appointed registrar of stock. There was considerable excitement among speculators on the subject.

Quincy, Missouri & Pacific.

This railroad is completed nearly to Edina, 45 miles northwest of Quincy.

Lafayette, Muncie & Bloomington.

The following account of the resources and expenditures of this company and the condition of its road was given recently by E. M. Talbot, the Chief Engineer and Secretary:

"The last rail was laid at the Illinois State line January 6. The company took possession of the road January 23. January 29 the President made final settlement with L. A. Dauby & Co., contractors for building the Western Division.

"The resources of the company have been and are as follows, to wit:

Individual subscriptions paid in	$76,072 42
Benton County aid	15,000 00
Tippecanoe County aid	136,000 00
Clinton County aid	19,950 00
Tipton County aid	20,500 00
Delaware County aid	40,750 00
Bills payable	34,689 50
Received from sale of bonds	472,336 41
Total	$815,298 33

Amounts paid L. A. Dauby & Co	$264,798 77
Amounts paid for iron	220,093 41
Amounts paid for splice bars, bolts and spikes	25,846 86
Amounts paid for freight account	27,964 14
Amounts paid for frogs and crossings	1,000 00
Depots, tanks and wells	5,921 32
Grading track from South street to Junction	3,683 84
Ties, engineering, expenses and construction east of Lafayette	265,989 99
Total	$815,298 33

"All the monthly estimates east of Lafayette have been promptly paid.

"There are about 20,000 yards of earth to be moved, to complete the road from Lafayette to Muncie.

"The timber is all ordered and being delivered for the bridges, and the whole work will be completed by May 1. I have made contracts along the line for 240,000 cross ties, which are being rapidly put on the road, all to be received and paid for by April 15.

"The entire line will be *graded, bridged and tied* before May 1, 1872. I would urge the necessity of an early purchase of the iron, so it can be laid early in the season. I can see no reason why we should not move the next harvest over our road."

The section of this road east of Lafayette is 37 miles long, and, by this report, cost for construction $549,309, or at the rate of $14,810 per mile. The road, however, is not yet fit to run on, being unballasted, and is without equipment.

Erie Railway.

The Assistant Secretary of the Treasury has made the following announcement to collectors of customs:

"You are hereby notified that the Erie Railway Company has given bond and is duly authorized to transport unappraised merchandise within the United States, under act of July 14, 1870, and the treasury regulations of Oct. 1, 1870, in the cars of the Erie Railway Company, and of their express freight lines known as the 'Great Western Dispatch,' 'Erie Fast Freight Line' and 'Erie Pacific Dispatch,' from New York to the following ports, viz.: Buffalo, Cleveland, Cincinnati, Evansville, Chicago, Milwaukee, Detroit, St. Louis, Louisville, Memphis, New Orleans and San Francisco."

Houston & Texas Central.

This road was completed on the 1st inst. to the Trinity River, 80 miles north of Houston.

Ohio & Mississippi.

The Louisville *Ledger* reports that this company, having declined the terms on which it was offered the use of the Louisville bridge, has obtained a charter for a new bridge at New Albany, and is likely enough to construct one there.

Columbus & San Antonio.

The President of this Texas company promises to begin the work of constructing it on the 1st of March.

Missouri River, Fort Scott & Gulf.

This company has prepared tickets, good for 500 and others for 1,000 miles riding on the road, which are sold at 3½ and 3 cents per mile respectively, good only for the person whose name is indorsed on them, and for six months.

Atlantic, Missouri & Ohio.

The Louisville *Ledger* says: "We learn that arrangements have been about completed between the Louisville & Nashville and the Atlantic, Mississippi & Ohio railroads, whereby the Louisville & Nashville road will assume in part the building of the gap in the Atlantic, Mississippi & Ohio road between Bristol, Virginia, and Livingston, Kentucky, a distance of 166 miles. Our information is to the effect that the work will be put under contract immediately, and pushed forward with all possible energy to a speedy completion. The first work to be put under contract will be the tunnel at Cumberland Gap, 4,200 feet in length, 3,000 feet of which are in Kentucky, and will be built by the Louisville & Nashville road, while the balance of the tunnel and the road thence to Bristol will be built by the Virginia company. The city of Louisville subscribed one million of dollars to this road, one hundred and fifty thousand dollars of which have already been drawn. The company will ask the issue to it by the city of the balance of the subscription, eight hundred and fifty thousand dollars, which is now due, and will doubtless be paid over in compliance with the provisions of the ordinance making the subscription."

THE SCRAP HEAP.

Inhumanity of a "Soulless Monopoly."

The utter depravity and hard-heartedness of railroad companies and their servants is well illustrated by the following, from the Knoxville (Minn.) *Press:*

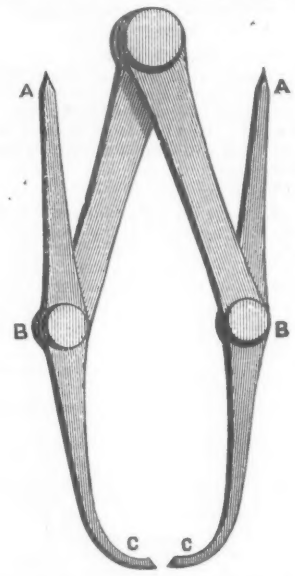
"'Your fare, if you please, madam,' said the conductor to an elderly lady who had got aboard at a way-station. The elderly lady looked up, and drawing forth a letter, spoke with a voice that was shrill: 'Two of Mr. ——'s children is dead, and they've writ to me to come to the buryin' to-day. Isn't it terrible?' The conductor looked as shocked as possible, and expressed sympathy. 'And,' continued the old lady, 'I want you to let me ride free.' 'I can't let you ride free unless you have a pass,' returned the conductor mildly. 'Not to go to a funeral?' said the old lady. 'No, madam,' replied the conductor, 'I am sorry to say that the rules of the road are very strict, and I am not allowed to discriminate.' 'Well, I think you oughtn't to charge folks for going to a funeral,' persisted the old lady. 'If we let everybody going to funerals ride free,' again spoke the conductor, 'it wouldn't pay. Besides it would be encouraging the funeral business in a way that would cast a gloom over the entire country. Your fare is a dollar and a half, madam.' 'Well,' retorted the old lady, drawing out a well-filled purse, 'I think you might let me go free, 'specially as I'm going to a double funeral. Mr. ——'s children is both dead, and they'll be buried in the same grave, I reckon. Oh, it's a turrible blow.' And the old lady, wiping her eyes, paid her fare. As the conductor moved on, she turned to a passenger and remarked, with some indignation, 'These railroaders is the most unfeelin' folks I ever seed.'"

American Bridge Company.

From the organization of this company up to Jan. 1, 1872, seventeen months, it constructed bridges and turntables of the aggregate value of $3,400,000. Among these were structures erected at Mobile, Ala.; Trinity River, Texas; Fort Gibson, Indian Territory, and in almost every State in the northwest, including two bridges over the Mississippi (at Hastings and Winona) and the immense structures over the Missouri at Omaha and Leavenworth. The total length of the bridge structures erected in that time is more than seven miles, including 8,620 feet of Post iron truss, 12,220 feet of Post's combination truss, 12,080 feet of Howe truss, 2,300 feet of diagonal truss highway bridges—all in fixed spans; also the following draw spans: 1,460 feet of Post's diagonal iron truss, 408 feet of Post's combination, 1,139 of Howe truss.

Combination Callipers and Dividers.

The construction of this tool will be apparent from the engraving. The ends, *c c*, when in the position shown, form a pair of ordinary outside callipers; and when reversed a pair of dividers. By reversing one end only it makes a very useful tool for measuring a variety of work, or it can be used as a tram for describing large circles.

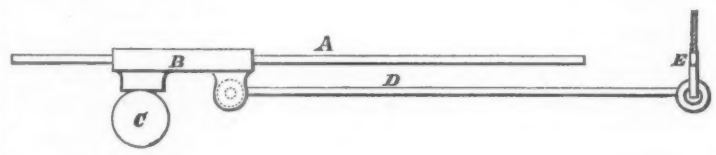


It is also capable of measuring a much larger shaft than is possible with ordinary callipers of the same size, and a circle 12 inches in diameter can be described by a 3-inch pair. It is the invention of Mr. L. P. Barnes, of Fitchburg, Mass.

The same gentleman is the inventor of a very neat and effective

Adjustable Door Fastener

For locomotive-cab doors, shown herewith. This consists of a straight bar *A*, which is attached to the side of the cab, over the window or window-frame.



B is a slide which is fastened to the bar by tightening the thumb-screw *C*. The eye-bolt *E* is fastened to the door and attached to the slide *B* by the rod *D*. On opening or closing the door the slide is moved on the bar *A*, and when opened at the desired angle or position it is held to the bar *A* by tightening the thumb-screw *C*. The general inefficiency of ordinary hooks and other fastenings is well known to locomotive engineers, and the annoyance caused by them, all who have had experience know. The above device is intended to remove these difficulties.

Iron Boats for the Mississippi.

The St. Louis *Democrat* says: "Messrs. Chapman & Thorp, of St. Louis, among the most extensive lumber dealers in the country, contracted a few days since with parties in Dubuque, Iowa, for a hull of the following dimensions: Hull, 145 feet; breadth of beam, 26 feet; depth, 4½ feet. The entire hull is to be of iron, including deck and guards. The hull will be divided into eight watertight compartments. There will be tanks in it, by which it will be practicable to sink the boat to the draft required in five minutes, or in about the same time to raise her to her original draft of water. The contract requires that she shall draw but eighteen inches water when completed, with water and twenty-four hours' fuel on board. In short, she is to be a regular Clyde-built iron vessel. No rivets will be seen; on the contrary, the exterior of the hull will present a perfectly even and smooth surface. Mr. Hopkins, a practical builder from the Clyde, Scotland, will superintend the construction. He built the iron steamer Clyde recently at Dubuque, and also an iron barge. The power is to be equal to 20 by 30 inch cylinders, to propel Dowler & Birdseye's shoal water propeller, which is the invention of Captain John Dowler, an Illinois River steamboat man. The one under contract is to be able to tow up stream two thousand five hundred tons weight at a speed of 4½ to 5 miles per hour. She will have a full 'texas,' with business office, and rooms for the employes of the company. It is to be completed by May 1st of this year, and delivered in St. Louis completed. The same parties will soon begin the construction of two other iron steamboat hulls for the same firm, one larger and one smaller than the one now building, and all to be furnished with the shoal water propeller aforesaid. They will be fully employed in the upper Mississippi during navigation in towing rafts. When navigation is suspended they will tow in the lower river. Bids for these hulls, or one of them, were received from St. Louis and Dubuque. No bid was received from Pittsburgh or Cincinnati, as they were not possessed of the proper facilities for such work, and were therefore unprepared to make bids."

A Slight Difference.

It is reported that the Intercolonial Railway engineers have found hard bottom for Miramichi Bridge at a depth of 130 feet. The profile on which contractors were invited to tender showed rock bottom at about 48 feet, a difference of about 80 feet.